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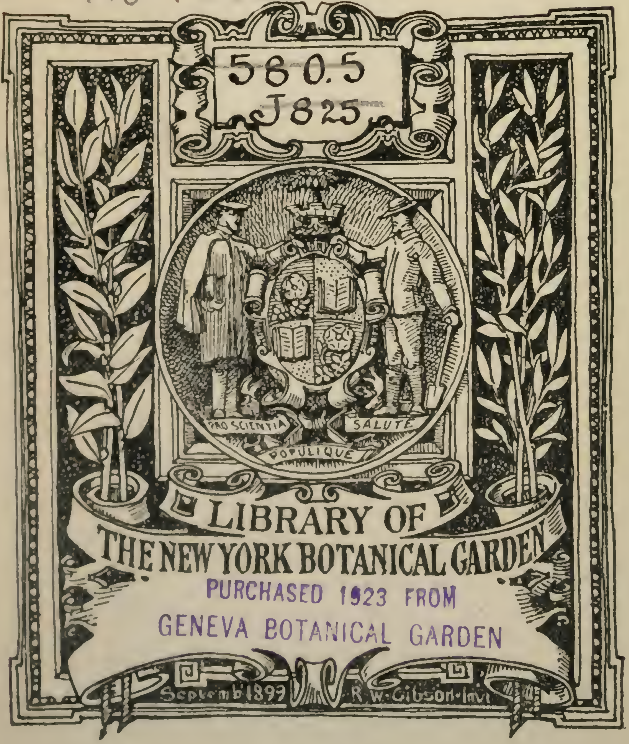
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Edited by

JAMES BRITTEN, F.L.S.,

British Museum (Natural History), South Kensington.

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(VOL. XX. OF THE ENTIRE WORK.)

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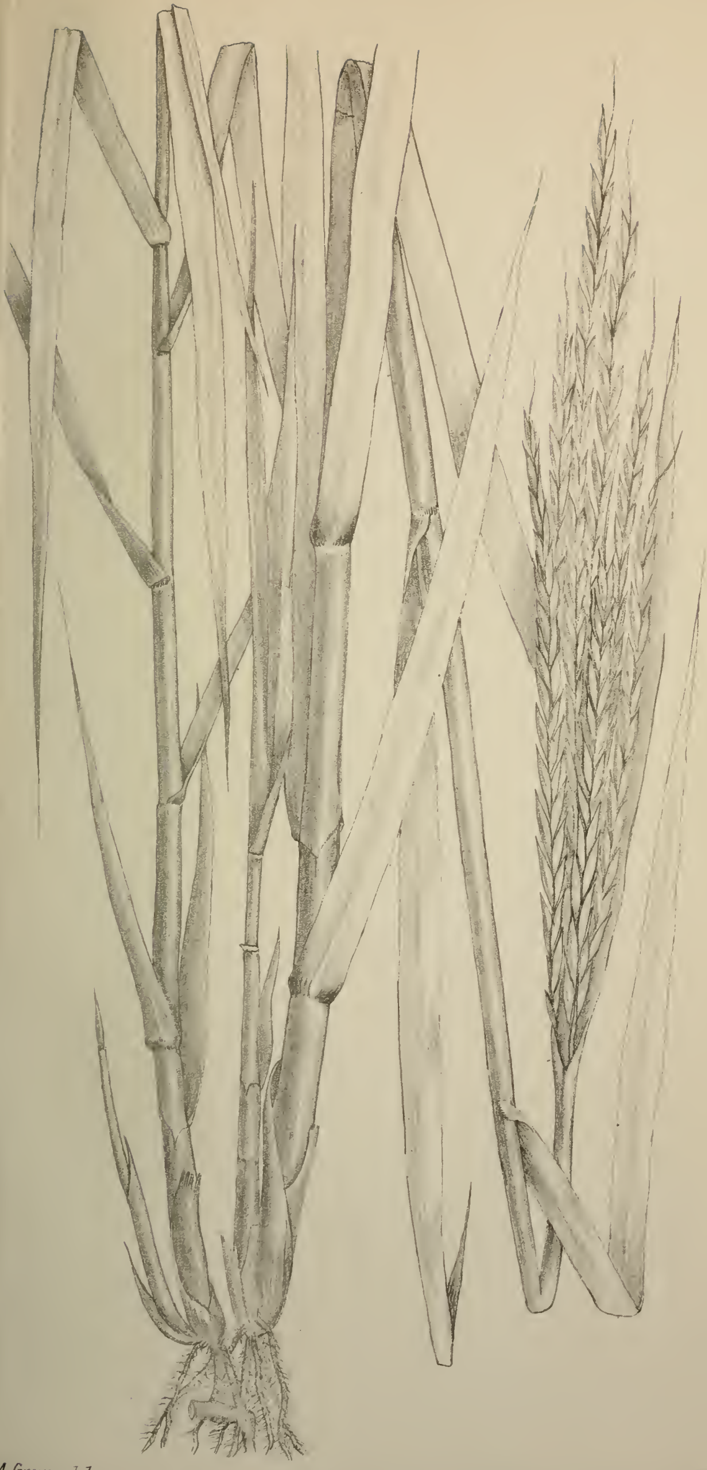
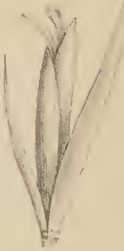
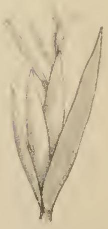
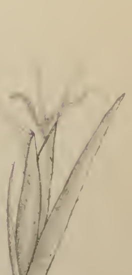




S. Townsendi



S. alterniflora



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Original Articles.

ON *SPARTINA TOWNSENDI*, GROVES.

By Henry and James Groves.

(Tab. 225.)

Since the publication of our original description of *Spartina Townsendi*, in the Report of the Botanical Exchange Club, we have had an opportunity of examining a larger number of specimens of the allied species, and, as we are publishing a plate of it, think it desirable to give a fuller description.

Spartina Townsendi, H. & J. Groves, in Report of Botanical Exchange Club for 1880–1881, p. 37.—Rootstock stout. Stem stout, nearly erect, 1½–4 ft. in height. Leaves all falling short of the spikes; sheath strongly ribbed; lamina 5–12 in. long, nearly flat, broadest at the base (sometimes over ½ in.), jointed to the sheath. Panicle sometimes as much as 11 in. long, somewhat spreading. Spikes usually 4–9, 4–7 in. long, flattened. Rachis flexuous, triangular, produced beyond the top of the last spikelet, often as much as ⅝ in. Spikelets 15–30, imbricate but not crowded, about half their own length apart. Glumes ciliate on the keel and often slightly pubescent, faintly ribbed, unequal, the larger ⅝–¾ in. long, broadly lanceolate, the smaller lanceolate; pales slightly pubescent.

The present species differs from *S. stricta* in being 2–3 times the height, in the more erect and much stouter stem, the flatness of the leaves, the very large and somewhat spreading panicle, the greater number of the spikelets, and the considerable production of the rachis; from *S. alterniflora* by the shorter upper leaves, the more strongly striate sheaths, jointed to the broader-based laminæ, the longer lower spikes, broader rachis, larger spikelets, with more lanceolate glumes, which are much less distinctly keeled and ribbed, and more pubescent.

AUG 7 - 1923

Dr. Boswell has suggested that our plant is the true *S. glabra*, Muhl., but Muhlenberg's description, in his 'Descript. uber. Graminum et plant. Calam. Amer. Sept.' (1817) p. 54, seems to point to *S. alterniflora*, although he adds thereto, "Variat spicis 2 erectis, terminali pedunculata altera sessilis, quæ *stricta* Smith esse videtur," so that he may have intended a broad species, including both *S. stricta* and *S. alterniflora*. None of the American specimens, moreover, at Kew, or the British Museum, resemble our plant. Asa Gray includes *stricta*, *glabra* and *alterniflora* under one species (*S. stricta*), for the var. *glabra* of which he quotes "*S. glabra*, Muhl., partly," and gives as the characters, "Culm and leaves longer; spikes 5–12 (2–3 in. long); spikelets imbricate—crowded," which shows it to be a form with short spikes and crowded spikelets, thus diverging in the direction of the *cynosuroides* group.

S. Townsendi occurs in considerable abundance on the mud-flats of the western shore of Southampton Water, both above and below Hythe, where it is conspicuous among the *alterniflora*, with which it grows, by its more compact masses and yellower spikes. We have much pleasure in naming it after Mr. Frederick Townsend, who first distinguished it from *S. alterniflora*, which species it closely resembles in habit, and under which name we had sent him a specimen.

Our figure shows *S. Townsendi*, reduced to one-quarter the natural size. The spikelets of this and the other species are magnified to four times the natural size, the glumes being represented as pulled apart, for convenience of examination.

SPICILEGIA FLORÆ SINENSIS: DIAGNOSES OF NEW, AND HABITATS OF RARE OR HITHERTO UNRECORDED CHINESE PLANTS.

By H. F. Hance, Ph.D., Memb. Acad. Nat. Cur., &c. &c.

VI.

1. *Anemone* (*Pulsatilla*) *chinensis*, Bge.—In prov. Kiang-su, prope Chin-kiang, flor. Februario, frf. Aprili 1880, detexit Bullock. Exceedingly fine specimens of this very handsome plant, which had not hitherto, I believe, been found south of the Shan-tung promontory.

2. *Talauma obovata*, Benth. & Hook. f.—Circa I-chang, prov. Hu-peh, culta, Apr. 1880, e speciminibus spontaneis, teste am. Watters, a montosis prov. Sz-chu'an allatis.

3. *Berberis* (*Mahonia*) *nipalensis*, Spr.—In monte Koh-loh-shan, ab æstivo occasu oppidi Chung-king, prov. Sz-chu'an, Chinæ mediæ, alt. circ. 2000 ped. s.m. sterilem tantum invenit W. Mesny, a. 1880. Widely diffused throughout the mountainous regions of India, but I believe now first detected in China.

4. *Epimedium* (*Aceranthus*) *sinense*, Siebold. — Juxta urbem I-chang, prov. Hu-peh, m. Apr. 1880, legit T. Watters. The detection of this species wild is interesting, as tending to confirm Siebold's statement (Miq. Ann. mus. bot. Lugd.-Bat. ii. 71), that it was introduced into Japan from China. I entirely concur with Marchand (Adansonia iv. 128), Baillon (Adans. ii. 268; Hist. d.

pl. iii. 56), and Maximowicz (Mél. biol. Acad. St. Petersb. ix. 713), that *Aceranthus* cannot be maintained as a genus.

5. *Polygala Wattersii*, Hance.—Gregarie crescentem montesque secus fl. Lien-chau prov. Cantonensis, pulchre ornantem, versus Martii exitum a. 1881, invenit rev. B. C. Henry. The detection of this remarkable species in Kwang-tung enables me to add some particulars to the character I formerly drew up. According to Mr. Henry, it forms "a branching shrub, rather round and symmetrical in shape, from four to eight feet high;" and he describes the inner petaloid sepals as of a golden yellow, and the petals as of a purplish hue; and so they dry in his specimens. The racemes are usually solitary in the axils of the crowded upper leaves, and have as many as forty or more flowers; and these are little more than half the size of those on the I-chang specimen. But I do not in any way doubt that the two are conspecific. Although so utterly different in habit from the other species, which are all delicate herbs, the Chinese plant seems, in every point of structure, to accord with Hasskarl's genus *Semeiocardium;* which, however, unless *Chamæbuxus* be maintained, cannot, I hold, be separated from *Polygala*.

6. *Grewia parviflora*, Bunge.—In collinis ad ripas fl. Yang-toz, æst. 1878, necnon circa Chin-kiang, prov. Kiang-su, Maio 1880, coll. Bullock.

7. *Linum trigynum*, Roxb.—Juxta urbem I-chang, ineunte m. Aprili 1880, leg. am. T. Watters. The specimen is poor, but there is no doubt of its identity, and this is an unexpected addition to the Chinese flora. The discovery of several closely allied species in California, forming Asa Gray's section *Hesperolinon* (Proc. Amer. Acad. vii. 521; Watson Bot. Calif. i. 89), has conclusively shown that *Reinwardtia* is untenable as a genus. In the Asiatic plant the small appendages of the petals cohere strongly with the adjacent petal, and their function appears to be simply to hold the petals together.

8. *Xanthoxylon Bungei*, Planch.—In collibus Feng-wang-shan, prope Shang-hai, Maio 1876, invenit F. B. Forbes; circa Chin-kiang, prov. Kiang-su, Maio 1880, leg. Bullock; juxta I-chang, prov. Hu-peh, Jun. 1880, coll. Watters.

9. *Vitis bryoniifolia*, Bunge.—Circa A-moy, coll. De Grijs, a. 1858; in ins. Formosa, prope Tam-sui, Aprili 1864 (Oldham n. 85); ad cacumina collium, Ningpo, Maio 1877, leg. Hancock. Hancock's plant is so named by Maximowicz (Ad fl. As. or. cogn. melior. Fragm. 7)—than whom no one should have a better knowledge of Bunge's plants—and it quite agrees with the character; on the other hand, I have the high authority of Mr. Bentham that De Grijs's (which is undoubtedly the same), is identical with *V. ficifolia*, Bge. It is also quite impossible to distinguish the Formosan plant, though its leaves are much less deeply incised, but the differences are almost as great in some of De Grijs's specimens. Miquel (Ann. mus. bot. Lugd.-Bat. i. 93) refers *V. ficifolia* to *V. Labrusca*, Linn., as does also Regel (Act. hort. Petrop. ii. 396), but he appears to consider *V. bryoniifolia* (also

reduced by Regel to *V. Labrusca*), as the same as *V. amurensis*, Rupr., which with Regel he regards as a variety of *V. vinifera*, Linn. Whatever may be the real name of the plant I possess, I consider it distinct from either of these. It is likely that Bunge's two species should be united.

10. VITIS (*Euritis*, *Ampelos*) HANCOCKII, *sp. nov.*—Fruticulus 4–6 pedalis, ramulis inflorescentiæ rachi foliorumque pagina inferiore præsertim secus nervos pilis articulatis ferrugineis dense vestitis, stipulis lanceolatis glaberrimis scariosis 3 lin. longis, foliis brevissime petiolatis oblique oblongis basi inæquali obtusis apice acutis remote serratis serraturis calloso-mucronatis supra sublucidis glabratis 2½ poll. longis 1¼ poll. latis, paniculis oppositifoliis ecirrhosis folio plerumque brevioribus, floribus viridulis fragrantibus, calyce parvo glaberrimo, petalis glaberrimis calyptratim secedentibus, stylo nullo.

Ad. latera collium, in umbrosis, circa Ning-po, prov. Che-kiang, raro crescentem invenit am. Hancock, sub initio m. Maii, 1877. (Herb. propr. n. 21220.)

A very distinct and well-marked species.

11. *Acer tataricum*, Linn., var. *Ginnala*, Maxim.—In montosis circa Chin-kiang, prov. Kiang-su, Maio 1880, coll. Bullock. When my excellent and learned friend the author of the 'Flora Amurensis' reduced his provisional species (Bull. Acad. Pétersb. xv. 407) to the central and south Russian one (Prim. fl. Amur. 67), he believed that it had a well-marked distinction as a variety, by the leaves having well-developed lateral lobes, and his own Manchurian specimens certainly showed this, as does a Jehol one which the Abbé David gave me. But some alpine Japanese specimens of Tschonoski's, communicated by the Petersburg Academy, do not present this peculiarity, and those I am now recording have a singularly varied foliage, in regard to form, even on the same branch. The variety appears to me an ill-defined one, though it seems constantly to have smaller fruit.

12. *Euscaphis staphyleoides*, Sieb. & Zucc.—In monte Koh-loh-shan, ab æstivo occasu oppidi Chung-king, prov. Sz-chu'an, alt. 2000 ped, substrato arenoso rubro, d. 8 Julii 1880, coll. W. Mesny. Already recorded by me as gathered by Mr. Forbes in the Shang-hai district; the present locality is 1000 miles farther westward.

13. *Thermopsis lanceolata*, R. Br.—Inter Tai-ning et Li-chia-chuang, ad fines prov. Shan-si, d. 18 Junii 1872, coll. rev. J. Pierson.

14. *Thermopsis chinensis*, Benth.—In collinis juxta Chin-kiang, prov. Kiang-su, Maio 1880, leg. Bullock. Upper stipules acutish, and much narrower than the lower obtuse ones. Raceme eight inches long, with alternate flowers. This is very close to *T. fabacea*, DC., and my specimen has the flowers quite as large.

15. *Crotalaria ferruginea*, Grah.—In prov. Hu-peh, juxta urbem I-chang, m. Junio 1880, legit T. Watters. Now first found on the Chinese continent, but had already been gathered in Formosa. The indumentum quite yellow, not ferruginous, as in the Ceylon plant.

16. Dalbergia (*Dalbergaria*) hupeana, *sp. nov.*—Foliolis 9 breviter petiolatis oblongis utrinque obtusis apice emarginatis minute hirtellis supra elevato-reticulatis 2½ poll. longis pollicem latis, paniculis parce hirtellis, floribus confertis 3 lin. longis, calycis hirtelli pedicello fere æquilongo suffulti dentibus 4 supremis obtusis infimo angusto producto, vexillo latiusculo, staminibus iso-diadelphis, ovario glabro triovulato, legumine . . . ?

Circa urbem I-chang, prov. Hu-peh, m. Junio 1880, coll. T. Watters. (Herb. propr. n. 21189.)

Differs from *D. lanceolaria*, Linn.! by its leaves being twice as large and not perfectly smooth, its much denser panicles with almost smooth branches, and its smaller flowers.

17. *Cæsalpinia* (*Sappania*) *sepiaria*, Roxb.—Juxta I-chang, Apr. 1880, leg. Watters.

18. *Rosa fragariiflora*, Ser.?—Prope oppidum Chung-king, prov. Sz-chu'an, vere 1881, coll. E. H. Parker. I do not know if I have correctly determined this very curious and singularly small-flowered species, of which I have only received fragmentary specimens both in flower and fruit. The latter is round or suburceolate, shining, ribbed with close-set nerves, only the size of a small pea, and the styles are woolly.

19. *Rosa microphylla*, Roxb.—In prov. chinensi Kwei-chau, mm. Julio–Septembri 1879, floridam fructiferamque frequenter observavit cl. W. Mesny, quo teste, sinice audit *Tse-li*, h. e. "prunus aculeata," fructusque rubros saporis gratissimi, ab indigenis avide quæsitos, præbet; in prov. Sz-chu'an, juxta urbem Chung-king, vere 1881, coll. E. H. Parker. The flowers are pale red. I am indebted to the kindness of Prof. Crépin for the determination of this fine plant, which, according to him (Prim. monogr. Ros. 147), had only hitherto been found truly wild and single-flowered on the banks of Lake Hakone, in Japan. Its undoubted presence, therefore, and that not sparingly, in China, is interesting. Mr. Mesny has settled two hitherto uncertain points, the colour of both the flowers and the ripe fruit.*

20. Photinia melanostigma, *sp. nov.*—Ramis ramulisque glaberrimis, foliis rigide coriaceis oblongis basi cuneatis apice cuspidato-acuminatis per totam marginem crebre inæqualiter calloso-serratis novellis subtus dense cinereo-lanatis maturis supra glaberrimis lucidis costa impressa venularum rete parum prominulo subtus (saltem in sicco) rufescentibus opacis pilis brevibus albidis sparsis pustulisque nigris crebris conspersis venis venulisque reticulatis conspicue elevatis 4½ poll. longis sesquipollicem latis petiolo pollicari denticulis 2–3 callosis utrinque aucto, floribus in paniculam terminalem subglobosam e corymbulis conflatam petiolum paulo tantum excedentum congestis, pedunculis pedicellisque glaberrimis, calycis extus glaberrimi lobis brevibus triangulatis intus dense lanatis tubo glaberrimo, petalis obovatis laciniis calycinis

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* The species has recently been figured in the 'Botanical Magazine' for February, 1881 (tab. 6548); but the text does not say whence the specimen was obtained.

triplo longioribus intus inferne dense lanatis, ovario lanato, staminibus stylisque glaberrimis.

In prov. Cantonensi, secus fl. North River, m. Martio 1881, detexit rev. B. C. Henry. (Herb. propr. n. 21691.)

An extremely well-marked species, quite different from all known to me, by its abbreviated roundish glabrous inflorescence, and its foliage, and only agreeing with *P- prunifolia*, Lindl.! in its black-dotted leaves.

21. *Spiræa* (*Chamædryon*) *media*, Schmidt.—Sat communis in medio monte Po-hua-shan, ad boream urb. Peking, m. Junio 1875, coll. Dr. O. a Moellendorff; in collinis prov. Kiang-su, prope Chin-kiang, Maio 1880, leg. Bullock. Leaves quite smooth beneath in both specimens.

22. *Spiræa* (*Chamædryon*) *media*, Schmidt, var. *sericea*, Regel.—Circa oppidum Zhe-hoh, v. Jehol, Mongoliæ, m. Maio floridam legit reverendus abbas David.

23. *Daucus Carota*, Linn.—In montosis prov. Kiang-su, prope Chin-kiang, vere 1880, leg. Bullock.

24. *Hedera Helix*, Linn.—In prov. Cantonensi, secus fl. Lien chau, m. Mart. 1181, sterilem invenit rev. B. C. Henry. The first south Chinese specimens ever brought to me of genuine ivy. The leaves are very pretty, being cordate and trilobed, as usually depicted by artists; which form is not, I think, common in India.

25. *Viburnum* (*Euviburnum*, *Lantana*), *cotinifolium*, Don, var. γ. Hook. f. & Th.—In prov. Hu-peh, circa I-chang, Apr. 1880, coll. T. Watters; in prov. Kwei-chau, juxta fl. Wu-kiang, alt. 6000′, d. 11 Apr. 1880, invenit W. Mesny; prope Chung-king, prov. Sz-chu'an, vere 1881, leg. E. H. Parker. Not before, to my knowledge, recorded from China.

26. *Abelia serrata*, Sieb. & Zucc.—Circa I-chang, prov. Hu-peh, Junio 1880, coll. Watters; prope Chung-king, prov. Sz-chu'an vere 1881, leg. Parker. I am not aware that this has been gathered before truly wild in China.

27. *Cephalanthus naucleoïdes*, DC.—In prov. Kwang-si, d. 13 Junii 1879, coll. W. Mesny. Roxburgh describes his plant as having yellow flowers, and says nothing of their being fragrant (Fl. Ind. ed. Carey, i. 516); the specimen received by me is labelled as being from a shrub about ten feet high, with white sweet-scented blossoms. In every other respect it agrees so completely with Roxburgh's detailed character that I cannot doubt its identity.

28. *Senecio* (*Cacalia*) *aconitifolia*, Benth. & Hook. f.—Circa Chinkiang, prov. Kiang-su, Maio 1880, leg. Bullock.

29. *Androsace* (*Andraspis*) *saxifragifolia*, Bunge.—In prov. Cantonensi, secus fl. Lien-chau, Martio 1881, coll. rev. B. C. Henry. A remarkably southern station for this plant.

(To be continued).

SOME REMARKS ON THE TERMS *ANNUAL* AND *BIENNIAL.*

By T. R. Archer Briggs, F.L.S.

There are difficulties in assigning plants severally to two of the three divisions employed to mark the period of their duration: in other words, it often seems open to doubt whether a certain species should be accounted *Annual* or *Biennial.* More minute division seems required to define quite accurately the duration of many plants than that rendered possible by the use of the three terms, Annual, Biennial, and Perennial. At present there are species put together under two of them, *viz.*, annual and biennial, that differ considerably among themselves as to length of life and period of growth.

Annual, the term employed to express the shortest period of plant-existence, now includes under it species whose duration is considerably less than that of twelve calendar months. Here we find some *Atriplices*, *Chenopodia*, &c., together with many weeds of cultivation, which spring up in April or May and die in October or November. Of still shorter duration are often several species; the common little grass, *Poa annua*, for instance, whose whole period of existence is sometimes limited to four or five months. But together with the plants just named, *annual* now also includes not only the species to which it best and most strictly applies—*viz.*, plants that vegetate from seed in early spring and last until the succeeding winter—but also many kinds of *Geranium*, *Trifolium*, &c., which spring up in late summer or autumn from seed then recently shed, live on through the winter, flower the next spring or summer, bear seed, and then die. The life of these last consequently extends over a portion of two years, though it is not ordinarily prolonged beyond twelve months. This being the case, it follows that they may strictly be held to be annuals only, yet by so considering them we abolish all distinction between them and plants whose whole life does not extend beyond half this time. Sometimes a plant living for so short a period as six or seven months only will nevertheless have this time made up of parts of two different years. *Draba verna*, for instance, may occasionally be found sufficiently advanced to produce some flowers before the end of December, and may be seen shedding seed by the end of March. The most truly *biennial* plants are those of the nature of *Erysimum Alliaria* and *Digitalis purpurea*, species that shed seed in summer or autumn which does not vegetate until the next spring. The young plants then produced continue to increase in size until the succeeding winter, live through it without growing much, but in the next spring start into vigorous growth, and during this second year of their existence flower, produce seed, and then die.

SISYRINCHIUM BERMUDIANUM IN KERRY.

By A. G. More, F.L.S.

When visiting my friend Dr. Battersby, last April, I took the opportunity of calling upon the Rev. A. Isaac, of Milltown, who was reported to have found *Sisyrinchium Bermudianum* in that neighbourhood. At the Rectory we were fortunate in meeting Lady Godfrey, who was kind enough to conduct us to a locality within a short distance of Milltown, where she had previously marked down the plant, and showed us the young shoots, of which only a few were to be seen at this early season.

This locality, which lies on the north-east of Milltown, is on some enclosed, grassy, but not boggy, pastures, adjoining a road, and near to a large copse which is clearly not aboriginal. The station seems at present sufficiently "wild," nor could I trace near it any cottage ruins, nor recent marks of agriculture. Still the ground was certainly occupied as pasture, and might have been tilled at no very distant period.

In a letter dated 29th July, 1881, Mr. Isaac mentions another locality a mile and a half south-west of Milltown, near Lough Dromin, where he found the *Sisyrinchium* growing "in a field over which it seems to be evenly but not densely scattered"; and at the same time he was kind enough to send a specimen, which, beyond all doubt, authenticates the species. He searched for it in adjoining fields, but did not find it; but, "from the nature and general circumstances of the soil in which it is found," he is strongly disposed to believe it native.

I may here mention a locality in Westmeath where the *Sisyrinchium* cannot be considered otherwise than as an introduced plant, and for the knowledge of which I am indebted to my friend Mr. H. C. Hart. Mr. John R. Simms reports the "Canadian grass" as having been found (1879) near Mullingar, growing "in a gravel walk that had been neglected for years, and covered with weeds. The soil was very cold and hard; in fact its roots were in the stones and gravel which formed the foundation of the walk. It is a very free grower and bears dividing, and is at present (July 6th, 1879) covered with pods of seed."

Under the circumstances, it will probably be best to wait until we know something more of its range, present circumstances, and past history, in Kerry, before pronouncing any opinion on its claims to be considered indigenous; the more so, as it seems so easily to establish itself.

ON SOME NORTH DEVON PLANTS.

By the Rev. W. Moyle Rogers, F.L.S.

A stay of about three weeks on the North Devon coast last summer has enabled me to write the following notes, which are supplemental to two papers on the same subject contributed by me to this Journal in 1877 and 1879. No stations are given but those in which I have actually seen the living plant. I am indebted to Mr. H. A. Evans, the President of the United Services College Natural History Society of Westward Ho, and to Mr. F. B. Hinchliff, one of the members of that Society, for directing me to Braunton Burrows stations for two or three plants which I had not previously found in N. Devon. Such stations will be known by the name in italics after them. The other references (in parentheses) following some other stations are respectively abbreviations for the following works:—"Fl. Dev." for 'Flora Devoniensis,' "Phyt." for 'The Phytologist,' "Keys Fl." for Keys' 'Flora of Devon and Cornwall,' and "Rav. Fl." for Ravenshaw's 'Flowering Plants and Ferns of Devonshire, Reissue with Supplement.' By "new record" is meant a species not specially recorded for North Devon in any of these publications, in 'Topographical Botany,' in the 'Reports of the Botanical Record Club,' nor (so far as I have been able to ascertain) in this Journal. If it should prove that any plant is improperly so described, I shall be grateful to any one who will set me right in the matter.

Ranunculus Baudotii, Godron, d. *salsuginosus*.—On mud at the edge of one of the ponds in the recreation ground by Instow Burrows.

Papaver dubium, L., a. *Lamottei*.—Braunton Burrows at the S.E. end, by potato field; several plants.

Meconopsis cambrica, Vig.—Valleys of East and West Lyn. (T. Clark * in Phyt. N. S. iv. 742). No doubt native.

Diplotaxis muralis, DC.—Maintains its casual or denizen character at Instow as a weed in two or three gardens, and by the roadside at the edge of the Burrows. But the plants do not appear to have increased in number since 1879.

Lepidium Smithii, Hook.—Near Ley Bay; Mortehoe; Instow; Umberleigh; Zeal Monachorum. On rocky and dry banks; often only a plant or two together, but certainly native.

Polygala depressa, Wender.—Valley of West Lyn; Exmoor (by this is meant, throughout this paper, the border of the Moor on the Lynton side); about Watersmeet.

Saponaria officinalis, L.—On Braunton Burrows (Maw † in Phyt. n. s. iv. 787), and Instow Burrows (Keys Fl.), in several places and in great quantity; by the Taw, near Umberleigh. A denizen of course in all.

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* "Notes of a few days' visit to Lynmouth, Devonshire. By Thos. Clark."

† "Notes on the rarer plants occurring in the neighbourhood of the Estuary of the Taw and Torridge, North Devon. December 14, 1852,"

Stellaria aquatica, Scop.—By the Taw, near Umberleigh; observed only in one place, but in fairly good quantity. New record.

Hypericum Androsæmum, L.—Watermouth; Lynton (Rav. Fl.); Ley Bay. Rather scarce.

H. Elodes, L.—Near Torrington, on marshy hillside sloping to the Torridge.

Geranium pusillum, L.—Braunton Burrows, by the Taw Estuary, *F. B. Hinchliff*. New record.

G. lucidum, L.—About Lynton and Lynmouth, but in small quantity. Apparently quite local on the North Devon coast, as probably in all the more exposed parts of the county.

Erodium maritimum, Sm.—Valley of Rocks, Lynton; Lundy Isle; near Mortehoe, *Briggs;* Braunton Burrows (Maw in 'Botanical Gazette,' ii., 194, 1850).

Acer campestre, L.—Umberleigh; Zeal Monachorum. Not observed on the coast.

Ulex Gallii, Planch.—Valley of Rocks and elsewhere about Lynton; Exmoor; Lundy Isle; Ilfracombe; about Torrington (Maw in Phyt. N. S. iv. 792). Very common.

Trifolium medium, Huds.—Between Barnstaple and Parracombe; near Watersmeet and Woody Bay; near Ilfracombe (Rav. Fl.); Umberleigh. Locally abundant.

T. fragiferum, L.—Instow Burrows; Braunton Burrows; Westward Ho.

Vicia sylvatica, L.—Ley Bay, on western side; in some quantity, but plants small and flowering only slightly.

Orobus tenuifolius, Roth,—Valley of West Lyn; with typical *tuberosus*.

Spiræa salicifolia, L.—Roadside hedge, West Lyn Down. An alien or denizen no doubt, but well established.

Sanguisorba officinalis, L.—By the Torridge near Torrington; in one place and in small quantity.

Rubus Idæus, L.—Watermouth; between Barnstaple and Parracombe, common; and about Lynton quite takes a place among the most characteristic brambles of the district.

R. suberectus, Anders.—About the Ilford Bridges; in a wood to the west; and in roadside ditches to the east, towards Brendon; in great quantity.

R. near *Lindleianus* (the same bramble as that referred to in Mr. Briggs's 'Flora of Plymouth' as "allied to *Lindleianus*," p. 112).—The Lynmouth Tors and elsewhere in the Lynton district, frequent; about Torrington; between Westward Ho and Bideford; at Umberleigh, on the Taw. Very common. Apparently distributed throughout the county. Constant in its characters, and easily recognised.

R. rhamnifolius, W. & N.—Lynton Churchyard hedge, in good quantity; W. Lyn, hillside, in one place for some yards; Watersmeet and neighbourhood, occasionally; between Barnstaple and Parracombe; Umberleigh. Professor Babington would also place here a bramble which I found on hedges not far from Instow, on the Barnstaple Road. Decidedly local. Not recorded for N. Devon in "British Rubi," but discovered near Westward Ho in 1880 by Mr. H. A. Evans.

R. discolor, W. & N.—Lynton district; especially common close to the sea; frequent, but not as a rule the prevailing bramble, inland. Instow and Braunton Burrows; about Instow, Westward Ho, Torrington, and Umberleigh.

R, leucostachys, Sm.—Hedge near West Lyn Farm (a bush or two), the only place near Lynton where I saw the typical plant; but here and there in W. Lyn Valley occurs just the plant described at p. 115 of Brit. Rub. as the *R. leucostachys* var. *argenteus* of Bell Salter and of Prof. Babington's 'Synopsis.' Westward Ho; Torrington; Umberleigh. I believe not previously recorded for N. Devon, except in Rav. Fl. on Mr. R. Stewart's authority.

R. villicaulis, W. & N.—Valleys of East and West Lyn, frequent. Valley of Rocks. New record.

R. macrophyllus, Weihe, a. *umbrosus*.—W. Lyn Down, and border of Exmoor towards Martinhoe; between Lynton and Lynmouth; Woody Bay; between Barnstaple and Parracombe; Westward Ho. Frequent, especially on high ground.—c. *Schlectendalii*.—Hedges of steep lane between Ilford Bridges and W. Lyn Down.

R. pyramidalis, Bab.—Between Watersmeet and Ilford Bridges, in one or two spots; and again (in greater quantity) beyond Ilford Bridges, towards Brendon. (*R. Menkii*, W. & N., and *β. pyramidalis*, *R. pyramidalis*, Bab.—"Banks of the Lyn near Brendon;" the "var. with the type." Mr. E. Lees on British Rubi in Phyt. iv.) Not recorded for N. Devon in Brit. Rub.

R. Guntheri, Weihe.—By Ilford Bridges and in lanes and woods near; in considerable quantity. No N. Devon station given in Brit. Rub.

R. glandulosus, Bell, a. *Bellardi*.—Furzy hillside near Torrington. b. *hirtus*.—Valleys of E. & W. Lyn, in several places; above Woody Bay; near Parracombe. Usually the sub-var. *R. rotundifolius*, Blox. New record.

R. Balfourianus ? Blox.—"I should provisionally place this under *Balfourianus*" is what Prof. Babington says of a curiously weak bramble which prevails, almost to the exclusion of every other, in the immediate neighbourhood of Instow. It seems to bear hardly any fruit.

R. corylifolius, Sm.—Braunton Burrows; near Westward Ho; Umberleigh (good *sublustris*), in great quantity. New record.

R. cæsius, L.—Woollacombe Sands; the only place in N. Devon where I am quite satisfied that I have seen it.

Four of the most characteristic Rubi in the Lynton district I have quite failed to identify satisfactorily:—(1) "Near *affinis*," Prof. Babington,—a very large-leaved and remarkably leafy plant with handsome white flowers,—is certainly one of the most conspicuous brambles everywhere about Lynton and along the border of Exmoor as far as Loxhore. I have not met with anything like it elsewhere. (2) is one of the commonest wood brambles in the Lyn Valleys. I named it *R.? Sprengelii*, Weihe, an arrangement in which Mr. Briggs concurs; but Prof. Babington suggests ? *Guntheri*." (3) and (4) plainly belong to the *Glandulosi* set, and appeared to me to come nearest to *Kœhleri* and *diversifolius* respectively, though differing considerably from them. Prof. Babington inclines rather, though not without considerable doubt, to name them (3) *mutabilis* and (4) *Briggsii*. (4) is distributed throughout the district, and is especially abundant about the borders of woods in W. Lyn Valley. (3) occurs frequently in similar situations, but in less quantity, and appears to be identical with a bramble which Mr. Briggs has collected "near Fancy, neighbourhood of Plymouth," and which he labels "*Rubus* near *pallidus*, Weihe; *R. apricus*, Wimm.?" I have also found it near Fingle Bridge, by the Teign.

Rosa spinosissima, L., with turbinate fruit (*R. turbinata*, Lindl.)—Instow Burrows; in one part a great many bushes, a hundred or more, growing together in a kind of thicket, bearing some ripe fruit (all turbinate) and still a few flowers on, July 31st.

R. tomentosa, Sm. (aggregate).—West Lyn Wood, a few very large bushes; wood near Ilford Bridges, many young bushes; between Instow and Fremington, in two or three places (*R. cuspidatoides*, Crép., I think); Umberleigh. Mostly large and rather clothy-leaved forms.

R. micrantha, Sm.—Lynton; one large bush near the cliffs in the Valley of Rocks; others in West Lyn Wood; "The Tors," Lynmouth; several immense bushes, evidently of great age.

R. canina, L.—*R. lutetiana*, Leman. Valleys of E. & W. Lyn, The Tors, Lynmouth; Umberleigh; Braunton Burrows; &c.; frequent.—*R. dumalis*, Bechst. W. Lyn; Watersmeet; Umberleigh. Apparently less common than *lutetiana*.—*R. urbica*, Leman. W. Lyn Valley; Instow. Rather scarce.—*R. frondosa*, Steven. Lynmouth, in two or three places between The Tors and Countisbury Road; W. Lyn, hillside on south; between Instow and Fremington.—*R. arvatica*, Baker. Between Ley Bay and Woody Bay, one large bush.—*R. obtusifolia*, Desv. Between Lynton and Barbrook Mill, rather frequent; Instow, in the village and beyond, towards Fremington; in lane between Instow Burrows and Barnstaple Road.

R. systyla, Bast.—Valley of Rocks, only a bush or two by the cliffs; Umberleigh.

R. arvensis, Huds.—Lynton; Ley Bay; Instow—more abundant near Lynton than about Instow; Umberleigh (*R. bibracteata*, Bast., as well as type).

Pyrus latifolia, Pers.—Valley of E. Lyn, several large trees in the neighbourhood of Watersmeet (Prof. Babington in Bot. Gaz., iii., 35, 1851, as *P. scandica*).

Epilobium angustifolium, L.—W. Lyn Wood, only two plants; probably an "escape."

E. tetragonum, L.—Westward Ho.

E. obscurum, Schreb.—Lynton and elsewhere, common.

E. palustre, L.—Exmoor; Woody Bay.

Myriophyllum spicatum, L.—Brackish pool on Instow Burrows. New record for the segregate.

Sedum Telephium, L., a. *purpurascens*.—Valleys of E. Lyn (Rav. Fl.) and W. Lyn; in small quantity, especially in the latter station; but looking more decidedly like a native than I remember to have seen it anywhere else.

S. rupestre, Huds.—In rocky places in the valleys of E. and W. Lyn and in Ley Bay (T. Clark in Phyt. N. S. iv., 742). Differing much in colour of foliage as well as in luxuriance of growth, according to situation; the large plants in moist shady places being often of a bright green, while the smaller and more compact ones in dry and exposed places are usually glaucous.

Chrysosplenium oppositifolium, L.—Ley Bay; Woody Bay. Apparently common in suitable situations; as in S. E. Devon.

Sium angustifolium, L.—Braunton Burrows, in a sluggish stream or drain flowing into the Taw, *H. A. Evans*. Not recorded for N. Devon in Topogr. Bot., nor seen elsewhere in the vice-county by me. In Rav. Fl. it is given as occurring in "ditches," but without any station being named.

Pastinaca sativa, L.—Westward Ho. Perhaps a colonist.

Rubia peregrina, L.—Lynmouth, Instow, &c.; common.

Galium Mollugo, L.—W. Lyn Valley, apparently very local in that neighbourhood; Umberleigh (a form with very small flowers and narrow leaves).

Asperula odorata, L.—Valleys of E. and W. Lyn (N. Devon Handbook, quoted in Key's Fl.), in great quantity.

Serratula tinctoria, L.—Watersmeet; near Ilfracombe (Rav. Fl.); Watermouth; Westward Ho; Zeal Monachorum. More general than in my own neighbourhood, in S.E. Devon.

Centaurea nigra, L., var. *decipiens radiata*.—Near Bideford; near Torrington; between Barnstaple and Loxhore. This small-rayed form of *C. nigra* (which in S.E. Devon is far the most prevalent) I found nowhere quite near the coast, except between Bideford and Westward Ho; and for a considerable distance inland it appears to occur only very sparingly.

Tanacetum vulgare, L.—Lynton; Ilfracombe; Instow; Torrington; Umberleigh. Native, I think, in most or all of these stations.

Artemisia maritima, L.—By the Torridge near Bideford (Maw in Phyt. N. S. iv., 788), as well as about the Taw Estuary.

Bidens tripartita, L.—Near Torrington; by the Taw at Umberleigh.

Inula Conyza, DC.—Lynton (Rav. Fl.); Braunton; Braunton Burrows; Instow; Torrington. Rather common.

Cichorium Intybus, L.—Ilfracombe; near Braunton (Rav. Fl.); near Northam (Maw in Phyt. N. S. iv., 793); Westward Ho.

Leontodon hirtus, L.—Lynton, &c. Very common everywhere, as in S. Devon.

L. hispidus, L.—W. Lyn Valley (with glabrous involucres); apparently a colonist; Umberleigh. Very local.

Pieris hieracioides, L.—Rather frequent about Ilfracombe, Hele, and Watermouth.

Helminthia echioides, Gaert.—Ilfracombe; Lundy Isle; Instow and Instow Burrows; Fremington.

Tragopogon pratensis, L.—Watermouth; Instow; Umberleigh. In all, I think, the variety *minor*.

Lactuca muralis, Fresen.—E. and W. Lyn Woods, abundant.

Hieracium murorum, L.—Lyn Valleys and the Lynton coast, on rocks and old walls.

H. vulgatum, Fries.—Frequent in woods and lanes in the Lyn Valleys, and in several places between Barnstaple and Parracombe.

H. umbellatum, L.—Lynton; Ilfracombe; Lundy Isle; Clovelly (Rav. Fl.)

H. boreale, Fries.—Common in the stations given above for *H. vulgatum*. Watermouth; lane near Umberleigh.

Campanula Trachelium, L.—Woods at Watersmeet (Rav. Fl.), the only Devon station where I have seen a *Campanula*.

Wahlenbergia hederacea, Reich.—Exmoor; near Torrington.

Ligustrum vulgare, L.—Valley of Rocks; certainly native here. Frequent elsewhere, but usually of more uncertain origin.

Gentiana Amarella, L.—Braunton Burrows, near the Taw Estuary, *Evans* (Maw in Phyt. N. S. iv., 788).

Cuscuta Epithymum, Murr.—Mortehoe; Torrington.

Solanum nigrum, L.—Lundy Isle; Northam Burrows and Braunton Burrows (Maw, *ibid.*)

Hyoscyamus niger, L.—Instow Burrows; Braunton Burrows (Maw, *ibid.*)

Mimulus luteus, L.—By the Taw, near Umberleigh; one plant in flower, at a considerable distance from garden or house, but no doubt an alien; on a sand-bank.

Veronica Anagallis, L.—Braunton Burrows (Key's Fl.), in the stream with *Sium angustifolium* near the Taw Estuary, in considerable quantity. Very local in Devon and Cornwall.

Bartsia viscosa, L.—Braunton Burrows ('N. Devon Handbook,' Rav. Fl.)

Melampyrum pratense, L., c. *montanum* (with bright orange-coloured flowers).—E. and W. Lyn Valleys, in great quantity.

Mentha sativa, L., a. *rivalis*.—Torrington, Northam, Umberleigh, and elsewhere; frequent. b. *paludosa*.—Torrington; Umberleigh.

Scutellaria galericulata, L.—Torrington; Braunton Burrows ('Rav. *in litt.*, 1862,' Keys Fl.); Umberleigh.

Marrubium vulgare, L.—Instow Burrows; Braunton Burrows ('N. Devon Handbook,' quoted but questioned in Keys Fl.) In considerable quantity in both places; a denizen or native.

Lamium Galeobdolon, Crantz.—Lynton Woods; Umberleigh. Apparently not so frequent in North as in S.E. Devon.

Teucrium Scordium, L.—Braunton Burrows (Rev. W. S. Hore in Phyt. i., 163); in great quantity in several of the sandy hollows to the east of the lighthouse (by the Taw Estuary), as well as for a considerable distance to the north (along the coast).

Lithospermum officinale, L.—Instow Burrows.

Myosotis cæspitosa, Schultz.—Near Torrington, in the meadows by the Torridge; near Umberleigh, by the Taw; Braunton Burrows.

M. repens, Don.—Exmoor; Woody Bay.

Centunculus minimus, L.—Braunton Burrows, not far from their S.E. corner. New record.

Plantago lanceolata, L., b. *Timbali.*—Westward Ho, near the beach.

Chenopodium polyspermum, L.—Near Umberleigh, on sand-bank by the Taw (a. *spicatum*); several plants. New record.

Polygonum Bistorta, L.—In some wet bushy ground near the last-named species; only one plant; denizen (or native). In Topogr. Bot. not admitted as a native for either Devon or Cornwall.

Humulus Lupulus, L.—Umberleigh.

Betula alba, L., c. *pubescens.*—The Toro, Lynmouth.

Potamogeton natans, L.—The segregate. Braunton Burrows. In Topogr. Bot. the aggregate only is given for N. Devon.

P. perfoliatus, L. — In the Taw near Umberleigh. New record.

P. pusillus, L.—With the last; and also on Braunton Burrows.

Listera ovata, Brown.—W. Lyn Wood. Apparently scarce near the coast.

Luzula Forsteri, DC.—Woods at Watersmeet ('N. Devon Handbook,' in Keys Fl.)

Scirpus palustris, L.—Near Torrington; marshy ground near Umberleigh; in immense quantity. New record.

S. Savii, S. & M.—Near Torrington; the type, and b. *monostachys.*

S. Holoschœnus, L.—Braunton Burrows; in hollows to the east of the lighthouse, as well as towards the north; in very considerable quantity where it occurs, but apparently far less widely distributed over the Burrows than *Teucrium Scordium*, L. It is singular that so long ago as 1820 so conspicuous a plant as this should have been searched for in vain, and so should be thought to have become "exterminated by draining and cultivation," as is stated in Fl. Dev. Mr. Maw, in the paper so often referred to above (Phyt. N. S. iv., 789, 790), describes somewhat minutely the position of several hollows in which he had seen it growing. There certainly seems no immediate prospect of its being dislodged "by draining or cultivation" from any of the spots in which I have seen it.

S. sylvaticus, L.—By the Torridge near Torrington; by the Taw at Umberleigh.

Carex paniculata, L.—Near Torrington and near Umberleigh. New record; but previously reported to me by Mr. Evans, who in the early part of last summer sent me from the Westward Ho neighbourhood dried specimens of this, of the three species next noticed, and also of *C. præcox*, *C. pilulifera*, and *C. fulva*, which I have not yet met with in N. Devon.

C. stellulata, Good.—Exmoor; near Ilford Bridges; near Torrington. New record.

C. pallescens, L.—Meadow near Ilford Bridges. New record.

C. lævigata, Sm.—With the last. New record.

Agrostis canina, L.—Lyn Woods. New record.

Festuca rubra, L., b. *arenaria*.—By coast near Lynton. Queried for N. Devon in Topogr. Bot.

Asplenium marinum, L.—Rocks on the Lynton coast (Rav. Fl.), in considerable quantity.

Aspidium angulare, Willd.—Lynton. The only *Aspidium* that I have seen in N. Devon.

Chara fœtida, Braun, var. *longibracteata*.—Braunton Burrows, in sluggish stream flowing into the Taw Estuary. New record.

A NEW CHINESE BIGNONIAD.

By Henry F. Hance, Ph.D., F.L.S., &c.

Stereospermum (*Radermachera*) sinicum, sp. nov. Arborea, foliis oppositis cum impari bipinnatis circ. 4-jugis jugis circ. 7 foliolatis foliolis infimis sæpe ternis foliolis petiolulatis ovato-lanceolatis integerrinis basi rotundatis apice obtuse acuminatis membranaceis subtus pallidis utrinque minutissime impresso-punctatis 2 poll. longis 8–10 lin. latis petiolulo lateralium 1 lin. terminalis 6 lin. longo, paniculis terminalibus erectis amplis laxis, floribus pedicello 3–4 lineali fultis, calyce glandulis albidis minutis cupulatis confertissimis oculo tantum armato conspicuis obsito[*] ante anthesin clauso ellipsoides pollicari peracta anthesi campanulato leviter 10-sulcato 15 lin. longo inclusis lobis 5 triangulatis mucronatis parum inæqualibus trilinealibus, corollæ glaberrimæ pallide sulphureæ tubo sensim infundibulari tripollicari lobis rotundatis crispulis pollicaribus, staminibus 4 didynamis glaberrimis e fauce leviter exsertis cum rudimento quinti filiforme, ovarii glaberrimi placentis in utroque loculo 2 singula 4 series ovulorum gerente, stylo exserto stigmate bilamellato, capsula pendula subtereti plurisulcata acuminata circ. 16 poll. longa 4–5 lin. diametro sub lente minutissime albido-glandulosa, seminibus 2 lin. longis ad utrumque latus ala obtusa 2¾ lin. longa auctis, cotyledonibus planis.

In provincia Cantonensi, secus fluvium Lien-chau, m, Januario 1879, fructiferum obvenit amico Dri. C. Gerlach. (Herb. propr. n. 20797.)

Seeds taken from the fruit gathered by Dr. Gerlach were sown in Hong Kong Botanic Garden; and in July, 1881, when two years and a half old, and about ten feet high, the trees raised from these seeds flowered. From the specimens Mr. Ford, the superintendent, kindly sent me, I have drawn up the foregoing diagnosis, from which it will be evident that the plant belongs to Zollinger's genus *Radermachera*, which, although considered by Bureau to be distinguished from *Stereospermum* by "des caractères nombreux et importants,"* I very willingly follow Mr. Bentham† in regarding as a mere section of that genus. It appears, from the descriptions, to be quite distinct from the other six species of this group, already known,‡ and is, I suspect, nearest to *R. Banaibanai*, Bur.

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[*] The leaves of *S. giganteum* would appear to be furnished with similar glands, described by Miquel (Ann. mus. bot. Lugd.-Bat. i. 199) as "glandulæ immersæ, peziziformi-excavatæ." The foliage of the Chinese tree has merely simple colourless pits, as if pricked by a needle.

CONTRIBUTIONS TO THE FLORA OF CENTRAL MADAGASCAR.

By J. G. Baker, F.R.S.

During the last few years our knowledge of the Botany of Madagascar has been increased very materially. First some of the English ladies resident in the capital set themselves to work energetically, to make collections of the indigenous Ferns of the island. Miss Helen Gilpin, of the Friends' Foreign Mission, and the late Mrs. Pool together obtained about 200 species, of which 25 per cent. proved to be novelties. These two collections I reported upon to the Society at the time that they were received ('Journ. Linn. Soc.,' vol. xv., p. 411; and vol. xvi., p. 197). Then Mr. Langley Kitching, who travelled widely through the central provinces on a missionary journey, brought home a small but very interesting collection. A list of his Ferns will be found in this Journal for 1880, p. 326, and his new and more interesting flowering plants in the 'Journal of the Linnean Society,' xviii., pp. 264–280 (1881). During the latter half of 1880 and the beginning of 1881 we received at Kew three considerable collections, two of which came in two separate instalments, with an interval of time between them. The first of these contained upwards of 300 numbers, and was made principally in the Betsileo country by the Rev. R. Baron, of the London Missionary Society, who resided for some time at Fianarantsoa, the chief town of that province. The southern part of the ridge of high ground which runs north and south through the whole of Central Madagascar has been scarcely explored at all botanically, so that Mr. Baron's collection is of great interest, and contains many new species; and the value of the specimens is much enhanced by the notes, habit, and character made from the living plants which he has sent along with them, which I have used largely in drawing up the following descriptions. The second parcel was sent by Dr. Parker, of Antananarivo. Collections have previously been made in the province of Imerina by Bojer, Hilsenberg, Miller, and others, so that the proportion of novelties in this parcel is not so large as in Mr. Baron's. Dr. Parker has paid special attention to the native names of the plants, and has sent us a general sketch of the Botany of Central Madagascar, with remarks in detail upon the habit, distribution, and economic uses of the more remarkable species; and he has also sent an interesting paper on the drugs used as remedies by the natives, which has been communicated to the Pharmaceutical Society, and printed in their Journal under the title of "A Malagasy Materia Medica" ('Pharm. Journ.,' 1881, p. 853). The third collection was made by Dr. Hildebrandt, already well known by his botanical explorations in Somali-land, Zanzibar, and other parts of Tropical Africa. Dr. Hildebrandt's researches have, so far, been restricted to the Island of Nossibé and the western provinces of the mainland of Madagascar at a comparatively small elevation above sea-level; so that his collection represents a flora of an entirely different climatic type to those of our two English correspondents. In the present paper I have only attempted to notice the more interesting plants contained in the parcels sent by Mr. Baron and Dr. Parker, leaving untouched some of the more difficult natural orders, such as *Orchideæ* and *Gramineæ;* so that all the species here dealt with may be considered as belonging to the elevated region of the centre of the island, and included within the bounds of the three provinces of Imerina, Betsileo, and Tanala, and principally the two former.

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* Bureau, Adans. ii. 191. See also the same author's 'Monographie des Bignoniacées,' 50, where the slightness of the differential characters is made evident.

† Gen. Plant. ii. 1047.

‡ Seemann, Journ. Bot. viii. 146.

Nasturtium barbareæfolium, Baker, Fl. Maurit. 7. — Common in Betsileo-land, flowering in November and December, *Baron*, 32! Native name *Akondrow jaza*—the child's banana.

Acome micrantha, Baker.—*Polanisia micrantha*, Bojer, in Ann. Sc. Nat. ser. 2, xx. 57.—Province of Imerina; a common weed in fields of manioc and sugar-cane; also in any open ground, *Parker!* Received previously from Bojer and Lyall.

Acome dumosa, Baker.—*Polanisia dumosa*, Bojer MSS.—A much-branched annual, with finely glanduloso-pilose stems 1–2 ft. long. Leaves petioled, digitately trifoliolate; leaflets lanceolate or ovate-lanceolate, entire, acute, ½–1¼ in. long, obscurely hispid and ciliated, thin, green on both surfaces. Racemes very lax, finally 3–4 in. long; fruit-pedicels spreading at a right angle from the finely glandular rachis, ⅓–½ in long; bracts small, simple, foliaceous, lanceolate. Calyx densely glandular, 1/12 in. long; sepals 4, lanceolate. Petals obovate, yellowish, ¼ in. long. Stamens 6, as long as or rather longer than the corolla, the 2 lower with large anthers as long as the filaments, the 4 others with smaller anthers. Pod sessile, linear, straight, 1¼–1½ in. long, tapering at both ends, with many fine much-raised anastomosing ribs. Seeds about 50, brown, reniform, rugose.—Imerina, *Parker!* Roadsides at Fianarantsoa, Betsileo-land, *Baron* 11! Flowers in December.

Viola abyssinica, Steud. = *V. emirnensis*, Bojer MSS. = *V. Zongia*, Tulasne, in Ann. Sc. Nat. ser. 5, ix., 300. — Common on shady banks in the forests of the Betsileo country, *Baron* 90!

Imerina, *Parker!* This, the only Madagascar *Viola*, is evidently the same species that occurs in Abyssinia, the Camaroons, and Fernando Po.

Geranium simense, Hochst. = *G. emirnense*, Bojer.—Fanjakana, and on banks in shady places in Betsileo-land, *Baron* 27! 35! Imcrina, *Parker!* Native name, *Laratanana.* This also has a similar distribution to the last.

Hypericum japonicum, Thunb.—A plant gathered in plenty both by Dr. Parker and Rev. R. Baron, must evidently be referred to this widely-spread Asiatic species. Bojer also found it, and labelled it *Hypericum rupestre.* I believe *H. Lalandii*, Steud., of Tropical Africa and the Cape will prove to be a variety of the same species. Native name, *Tsikotrakotra.*

Psorospermum Fanerana, sp. n. — A much-branched shrub, generally 4–5, but sometimes 10–12 ft. high, with a little ferruginous stellate pubescence on the young branchlets. Leaves opposite, shortly petioled, oblong, entire, nearly glabrous, 1½–2 in. long, green on both surfaces, dotted with copious black glands. Inflorescence a dense terminal cyme; pedicels erect, longer than the flowers. Sepals 5, lanceolate, ferrugineo-pilose, persistent, ⅛ in. long. Petals white, obovate, villose on the face, rather longer than the sepals. Scales yellow, alternate with the petals. Stamens in 5 bundles of 3 each. Ovary 5-celled, black, glabrous; styles 5, not more than a quarter as long as the ovary; stigmas capitate. Fruit a 5-celled berry the size of a small pea, with a resinous yellow juice; cells 1-seeded.—Very abundant on the outside of the forest, East Betsileo, *Baron* 5! Native name, *Fanerana.* The Spanish fly occurs on it in large quantity.

Psorospermum androsæmifolium, sp. n. — A much-branched shrub 6–8 ft. high, with a little ferruginous stellate pubescence on the young branchlets. Leaves petioled, oblong, acute, 2–3 in. long, green on both surfaces, obscurely pilose, crenulate, dotted with copious black glands. Inflorescence a dense terminal cyme; pedicels ¼–⅓ in. long, erect, thinly ferrugineo-pilose. Sepals 5, ovate-oblong, ferrugineo-pilose, scarcely ½ in. long. Petals oblanceolate, yellowish white, 3 times as long as the sepals, with conspicuous black lines. Stamens in 5 bundles, about as long as the petals. Ovary globose, glabrous, 5-celled; styles nearly as long as tha ovary. Fruit a yellowish berry about the size of a pea, with red spots; cells 5, with 1–2 seeds in each.—West Betsileo, flowering in November and December, *Baron* 120! Native name, *Tambitsy.* Used, according to Dr. Parker, as a remedy for scabies and eczema. Six species of this genus from Madagascar are described by Spach in Ann. Sc. Nat. ser. 2, vol. v. p. 159.

Symphonia (Chrysopia) clusioides, sp. n.—A large tree, with glabrous crowded ultimate branchlets. Leaves shortly petioled, obovate, rigidly coriaceous, thick in texture, obtuse, green and glabrous on both surfaces, 1–1½ in. long, the close rather ascending nearly parallel veinlets conspicuous on the under side. Flowers in sparse terminal cymes; bracts numerous, coriaceous, lanceolate, or deltoid, persistent, ⅛–⅙ in. long; pedicels ⅓–½ in. long. Sepals 5, half-orbicular, much imbricated, bright red, coriaceous, glabrous, $\frac{1}{6}$ in. long, $\frac{1}{4}$ in. broad. Petals 5, orbicular, $\frac{1}{2}$ in. long, a paler red than the calyx. Stamens monadelphous; anthers in 5 bundles of 3 each, with the thick red connective protruding beyond the cells. Ovary ampullæform, 5-celled, with a thick style and 5 radiating stigmas like a bird's beak. Ovules 2 in a cell. Fruit not seen.—Betsileo-country, in the forest, *Baron* 16! Native name, *Kimba-vary*. The yellow resin that exudes from it is used in fastening knife-handles, &c.

(To be continued.)

SHORT NOTES.

Potamogeton lanceolatus in Ireland.—Among the Potamogetons kindly sent me from Ireland by Mr. D. Orr (see Journ. Bot., 1881, p. 312), was a specimen so like Smith's *P. lanceolatus* that I felt sure it must be referable to that species; but mistakes have so often occurred that I preferred to leave it for further examination. I have now no doubt it is *lanceolatus*, agreeing as it does with the Anglesea and Cambridgeshire specimens. To avoid any mistake I wrote to Mr. Orr, asking specially as to the locality of the specimen, and his answer is so far satisfactory. The specimen is labelled "Potamogeton? Six-Mile Water, Co. Antrim. D. Orr, 1845." Mr. Orr writes—"The time is so distant, and it was my first and last visit to that locality, that as to the exact place and quantity I am at a loss to say. But I quite remember the time. I was in company with the late Dr. Drummond, of Belfast; we entered at Muckamore, the right bank going down the river for a mile or more, and it must have been somewhere in that distance along the river that I got it." Three stations are given in the 'Cybele Hibernica' for *P. lanceolatus*, but the authors express doubt as to the specimens being identical with the Anglesea plant, and these have since been shown by Prof. Babington to be errors. One of these is in Antrim—"Mayola River, near Shane's Castle." I have succeeded in getting nearly ripe fruit on my living specimens; this has no resemblance to that of *P. heterophyllus*, and is like no described species I know. It may be of interest to British botanists to know what some European botanists think of our plant. Prof. Buchenau, of Bremen, suggests—"It may be an hybrid between *gramineus* (*heterophyllus*) and one of the linear-leaved species." This is answered in the negative by the fruit. Prof. O. Drude, of Dresden, says—"We have nothing like it in Germany." Dr. Nyman, of Stockholm, writes—" . . . by its rarity and sterility, may it not be supposed to be an ancient species that is becoming extinct, because the climatic conditions are changed?" M. Motelay, of Bordeaux, says—"We had confounded a form of *gramineus* (*heterophyllus*) with this; we supposed it to be a form between the true *gramineus* and *variifolius*, Thore." Mdlle. Eysan, of Salzburg, says—"We have no plant like it in in Austria."—Arthur Bennett.

THE FLOWERING OF PRIMULA SCOTICA, Hook.—At page 24 of this Journal for 1881, I drew attention to three different forms of *Primula scotica*, Hook., collected by me in a grassy spot on the heath to the west of the Standing Stones of Stenness, in Orkney, on 24th September, 1880. I selected six plants, and set them in flower-pots in the house at Orphir. Three of them had not flowered that year; one had flowered once, with one scape; another twice—first acaulescent, and second with one scape; and the remaining plant once — acaulescent. Last year these six plants flowered twice—with one scape each time—first in July, and second in September. The scape, with one exception, was normal at both periods of flowering. In the first or July flowering of the simple acaulescent plant of 1880, the peduncle was only a quarter of an inch in length. The habitat of these plants, near the Standing Stones of Stenness, was a bleak, barren spot. I have failed to find the acaulescent form in more favourable situations, such as the Links of Dunnet, in Caithness, where the soil is of much better quality, and the plant very luxuriant and abundant. From the above observations I think there is some evidence to show that the acaulescent form depends, to a great extent, on the poorness of the soil in which it grows, and that when placed under favourable circumstances the tendency is to return to the normal type, in which the fully-developed scape exists. Other circumstances, such as the nature of the season, may have some influence; but I cannot say that I observed any apparent difference between the last two years in the number of acaulescent plants, although, in Orkney, the summer of 1880 formed a very marked contrast to that of last year, being bright, warm, and dry in the former year, while in the latter it was dull, cold, and wet.—HENRY HALCRO JOHNSTON.

ARTEMISIA VULGARIS, *var.* COARCTATUS, Forcel.— In the latter part of last year I found a form of *Artemisia vulgaris*, growing in abundance near Stratford-on-Avon, which differed from all the forms I had yet seen of this plant in having remarkably narrow leaflets. Knowing the Rev. W. W. Newbould's critical skill, I forwarded specimens to him in the fresh state, which he examined, and decided to be the *A. vulgaris* var. *coarctatus*, Forcel. Specimens were afterwards forwarded to Prof. Babington, who gives a description of the variety in the last edition of his 'Manual.' Although I have since seen forms that approach this variety in some of the calcareous districts of Warwickshire, I do not think I have seen any form identical with that from near Stratford-on-Avon. Mr. T. R. Archer Briggs sent me a plant from near Plymouth that very nearly approaches the variety, and tells me it is the most frequent form in that district.—JAMES E. BAGNALL.

RUBUS HEMISTEMON, Mull., IN WARWICKSHIRE.—I send herewith specimens of a bramble which I submitted to Prof. Babington at the beginning of the present year. This, he informed me, he considered to be the *Rubus hemistemon*, Mull., a form closely allied to *R. affinis*, W. & N. It is very abundant in a stone quarry near Berkswell, Warwickshire. I first observed it in August, 1878; but I am informed by Prof. Babington that the plant was found many years since near Atherstone, Warwickshire, by the late Rev. Andrew Bloxam, but was sent bearing a different name to that given above. I have collected a series of specimens for the Exchange Club.—JAMES E. BAGNALL.

Extracts and Notices of Books and Memoirs.

THE LIFE-HISTORY OF HEMILEIA VASTATRIX *ON COFFEE.*

[MR. H. MARSHALL WARD has presented his third Report on Coffee-leaf Disease in Ceylon. It contains, as was to be expected, an exhaustive inquiry into the origin and life-history of *Hemileia vastatrix*, the nature of its relations with the coffee plant, and the effects of remedial measures. The life-history of the *Hemileia* cannot be better stated than in his own words, which we extract from the section of the Report devoted to it. In our next number his summary of the main points of importance in the whole inquiry will be given.]

"The outcome of numerous observations in addition to and in continuation of those referred to in former reports, shows that the history of the fungus which causes coffee-leaf disease may be fairly stated thus:—

An orange-coloured papillate spore, or granule of 'rust,' taken from a patch on a diseased leaf and sown in a drop of water on the lower surface of a healthy coffee-leaf, soon germinates—*i.e.*, it absorbs water and oxygen, swells up slightly, and protrudes a delicate, thin-walled tube from one or more points of its surface. This tube is a *direct continuation of the spore itself*, and the granular orange-coloured contents of the latter pass along the cavity of the tube as it extends on the surface of the leaf. On arriving at the orifice of a stoma or 'breathing pore,' this germinal tube commences to block it up, and soon sends a prolongation through the orifice into the passages between the loosely arranged cells of the interior of the leaf. Once safe inside the leaf, the short tube begins to branch in two or three directions, each branch absorbing the fluid bathing the leaf-cells with which it is in contact. As these first-formed branches gather strength and material, they put forth several other branches which rapidly extend into the spaces between the tissues around, and in this manner is formed a spreading meshwork or mycelium of short, stumpy, fungal tubes. As growth proceeds from the primary tube in all directions around the point of entry, the increasing mycelium soon requires more food than can be obtained by simply absorbing the nutritive fluids bathing the leaf-cells with which the branches are closely in contact; this increased demand for food is effectually supplied after a time by the sucking organs, or haustoria, which become formed by the older branches. Each bores through the wall of the cell with which it is in contact, and by means of the perforated passage obtains as food the contents of the leaf-cell. As growth proceeds in all directions from the point of entrance of the germinal tube—*i. e.*, a stoma—the leaf-cells first attacked and injured are evidently those nearest this central point, and the destruction of tissue proceeds in a centrifugal manner, *pari passu*, with the spread of the destroying mycelium. The injured cells become paler in colour as their contents become altered and destroyed, and thus shine through the outer layers of the leaf with a paler hue than the remainder of the tissue: the yellowish circular spot thus produced is the first indication to the naked eye of the damage done to the leaf—it is the so-called 'pin-spot.' As the destroying mycelium extends itself further into the tissues, its course is marked by dying cells, and a circular spreading of the pale disease patch is obvious to the outward observer. From the same cause the discoloration appears at a later date on the upper surface of the leaf, as the branches extend there.

When a vigorous, centrifugally spreading mycelium has thus been formed, the older portions at the centre commence to form *spores:* these are produced in compact groups from the substance of certain processes which are formed by aggregations of branches of the mycelium forced through the stomata. The first formed spore-groups appear at those stomata which lie close around the point of origin of the mycelium, and they are followed by others successively protruding through stomata further and further away from this point: thus, the production of spore-bearing heads also takes place in a centrifugal manner, and successive circles of them become arranged around those first formed. Each spore-bearing head is capable of producing large numbers of spores, successively budding forth during the period of activity. After a stock of spores has commenced to accumulate, falling off as they become ripe, and adhering to the leaf as the yellow or orange-coloured 'rust powder,' the completely exhausted leaf-cells, which have been destroyed by the mycelium, turn brown and decay, and in place of active, translucent, living cells, we find a mass of empty, shrivelled, useless, and discoloured vesicles. From what has been said above it is evident that the resulting brown dead patch, seen from without, necessarily commences in the centre, and spreads in a circular manner as before. Under certain circumstances, the second form of spore is produced later by the old spore-bearing heads, and shortly afterwards the growth ceases. In most cases, however, the attacked leaf falls before this, especially when many 'disease spots' have become established in its tissues.

The above is a short account of the succession of phenomena presented by the fungus on the coffee, from the germination of the papillate spore to the production of many similar spores from the adult mycelium; and it must be noted that each one of these spores is capable of reproducing the same cycle of phenomena, provided it meets with proper conditions of development. In this way the germination, growth, and reproduction of *Hemileia* are repeated again and again on the coffee on estates."

Conspectus Floræ Europææ. Auctore C. F. Nyman. III. Corolliforæ—Monochlamydeæ. Orebro, Sueciæ. 1881.

The peculiar value and great merit of this work are already so generally recognised among British botanists that it would be unnecessary, if not impertinent, to add to what has been said on this head in the reviews that have appeared in this Journal on Parts I. and II.* So as to the scope and plan of the work there can be no occasion for further remark or comment. That the labour involved in the preparation of this part must have been at least equal to that expended on the production of either of the others will be readily believed when it is remembered what critical genera are here dealt with. Thus under *Verbascum*, besides the distribution of the 54 species and 15 varieties given in detail, there are no less than 39 hybrids enumerated. *Mentha*, too, has its 14 hybrids and 11 varieties, in addition to its 13 species; and *Salix* its 64 hybrids, 10 varieties, and 54 species. In *Salix*, moreover (and to some extent in other genera), an attempt is made to give the details of distribution for hybrids, as well as for species and varieties. Then there are such formidable genera as *Teucrium* (50 species), *Salvia* (42), *Stachys* (50), *Thymus* (38), *Euphorbia* (107), *Plantago* (43), *Armeria* (44), and *Statice* (52); not to speak of such orders as *Scrophulariaceæ*, *Chenopodiaceæ*, and *Polygonaceæ*.

In his treatment of British species Dr. Nyman's conclusions in this Part seem to differ from those most prevalent amongst ourselves rather more frequently than was the case in Parts I. and II. The following notes include the chief instances of such disagreement, in the order in which they occur. If *Vinca minor*, L., is native anywhere in Great Britain (a very doubtful point), it would appear to be quite as much so in several of the Scottish counties as in any English. Here it is admitted as native in "Angl.," not "Brit." In *Gentiana*, *G. germanica*, W., is given specific rank; for *G. verna*, L., we find "Angl. (Teesdale, Durham)" instead of "Angl. bor (r)," or, more exactly, "Angl. (York n.-west, Durham, Westmoreland)"; and "Scot." for *G. uliginosa*, W., as a var. of *G. Amarella*, L. The treatment of the genus *Erythræa* is not a little bewildering to an ordinary British botanist. Not only does *E*, *linarifolia*, Pers., displace *E. littoralis*, Fries, and *E. tenuiflora*, Link., become absorbed in *E. latifolia*, Sm.; but England is credited with *E. conferta*, Pers. ("*E. litoralis*, Sm. Engl. Fl. 1824"), and Britain with *E. diffusa*, Woods †; while *E. capitata*, Willd., is altogether ignored. The union of *E. tenuiflora* with *E. latifolia* seems the more surprising, inasmuch as reference is made to Mr. Britten's paper in 'Journn. Bot.,' 1872, p. 176, as showing that what Dr. Nyman calls the "forma typica (*Smithiana*)" occurs nowhere in the whole world, so far as is known, except near Liverpool; and yet *E. tenuiflora* here appears not even as a variety, but merely as a synonym of *E. latifolia*, with "Hibern. Lusit." and other countries following "Angl. (r)," as descriptive of the distribution of the combined species. The true *Pulmonaria angustifolia*, L., is not held to be British, our Hants and Isle of Wight plant coming in apparently under *P. vulgaris*, Mér. *Myosotis repens*, Don, takes rank only as a variety of *M. palustris*, Rth., there being no further account of its distribution than "Brit. Scand. (et probabiliter etiam alibi)." Our *Scrophularia Ehrharti*, Stev., again becomes lost in the old aggregate *S. aquatica*, L., with no account given of its distribution. The pretty little fleshy-leaved yellow-flowered toadflax, so well established as a ballast plant near Plymouth and at one or two other spots on our coast, is held not to be *Linaria supina*, Desf., but *L. maritima*, DC.; and *L. repens*, Mill., gives place to *L. striata*, DC. The genus *Linaria* has 93 European species and 19 varieties, and it is suggested that the *L. italica* of English writers and "*L. sepium*, Allman (Hibern.)," are probably hybrids from *L. vulgaris* and *L. striata*. *Veronica hybrida*, L., is absorbed in *V. spicata*, L.; *V. Buxbaumii*, Ten., becomes *V. persica*, Poir.; and *Bartsia viscosa*, L., takes the, to us unfamiliar, name of *Trixago viscosa*, Stev. Instead of our *Bartsia Odontites*, Huds., with varieties, are given two species, *Odontites serotina*, Rchb. (all Europe, except N. Scandinavia and N. Russia), and *O. verna*, (P.) Rchb.,—each with a continental variety. In *Euphrasia* we are credited only with *E. officinalis*, (L.) Schk.; while *E. gracilis*, Fr., is given as another species, with 3 varieties, including *E. ericetorum*, Jord., and *E. tetraquetra*, Arrond. There is considerable shifting of names in our Orobanches: *O. cærulea*, Vill., becoming *Phelipæa cærulea*, C. A. Mey.; *O. elatior*, Sutt., giving place to *O. major*. L. Suec.; *O. major*, L., Sm., to *O. Rapum*, Th.; and *O. rubra*, Sm., to *O. Epithymum*, DC.; while *O. amethystea*, Th., takes rank as a species. This genus is credited with 70 European species and 22 varieties. Our one species of *Ballota*, with its variety, becomes two species; our common form under the name *B. alba*, L., and our variety *ruderalis* as *B. nigra*, L. *Thymus Chamædrys*, Fr., appears as a species, with 3 varieties; and *T. Serpyllum*, (L.) Fr., with 4. In *Mentha* we are credited with 9 out of 13 species; *M. alopecuroides*, Hull, appearing as a variety of *M. rotundifolia*, L., while *M. piperita*, Huds., is considered to be only a garden escape in Europe, and its native country unknown. *M. aquatica*, L., and *M. hirsuta*, L., are numbered as separate species, although it is added that they scarcely seem distinct. *M. rubra*, Huds., is placed as a variety of *M. gentilis*, L., and the only one; *M. rubra*, Sm., being given as a synonym of *M. sativa*, L. In *Rumex*, *R. sylvestris*, Wallr., ranks as a species; *R. nemorosus*, Schrad., is displaced by *R. sanguineus*, L.; and Britain is given, instead of England, for both *R. palustris*, Sm., and *R. maritimus*, L. *Polygonum maculatum*, Dyer & Trimen, appears as a variety of *P. lapathifolium*, L., under the name *P. nodosum*, P.; *P. mari-*

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* 'Journ. Bot.,' 1878, p. 347; 1879, p. 348.

† "Morlaise" is the solitary station given by Mr. Woods himself in his 'Tourist's Flora' for this species; but in 'Consp. Fl. Eur.' we find "Brit. Gall. bor.-occ. Hisp. bor.-occ. (Galloec.), Lusit." [*E. diffusa* is very distinct from any British form with which we are acquainted.—Ed. Journ. Bot.]

timum, L., has "Angl. mer. (Hants)," instead of "Angl. mer. (r)" (now that it has been found in Devon and Cornwall). *P. litorale*, Lk., is made a species. England is not allowed to have *Euphorbia pilosa*, L., the Bath plant being placed under *E. palustris*, L. *Parietaria erecta*, M. K., and *P. diffusa*, M. K., appear as distinct species, with the latter only as British. *Quercus* has 24 species, *Q. pedunculata*, Ehrh., and *Q. sessiliflora*, Slsb., counting as two. In *Salix*, perhaps the most noticeable thing is the great number of forms regarded as hybrids, including *S. viridis*, Fr. (held to be synonymous with *S. Russelliana*, Sm.), *S. undulata*, Ehrh., and *S. ambigua*, Ehrh. In *Betula*, *B. verrucosa*, Ehrh., and *B. pubescens*, Ehrh., are ranked as species, with *B. glutinosa*, Wallr., as a synonym of the latter.

Our naturalised and semi-naturalised plants and "excluded species" are often rightly so recorded, or (perhaps oftener) altogether omitted for this country; but we are unfortunately credited wrongly with having as natives the following species:—*Cuscuta Epilinum*, Weihe, "Brit." *C. europæa*, Murr., "Scot." (in addition to "Angl." rightly). *C. Trifolii*, Bab., "Angl." *C. planiflora*, Ten., var. *C. approximata*, Bab., "Angl." *C. suaveolens*, Ser. (*C. hassiaca*, Pf.), "Angl. *Anchusa sempervirens*, L., "Angl. (r)" (after "Hibern. inquil. (r)," rightly. *A. officinalis*, L., "Scot. (rr), Angl. (r)." *Verbascum Blattaria*, L., "Angl. mer. (r)" (*V. virgatum*, With., having "Angl." also; probably rightly, notwithstanding its exclusion from 'Topographical Botany"). *Scrophularia vernalis*, L., "Angl." *Phelipæa ramosa*, C. A. Mey., "Angl. (r)." *Stachys annua*, L., "Angl. (Kent)." *Leonurus Cardiaca*, L., "Angl., Scot." *Euphorbia Lathyris*, L., "Angl."

Two or three instances have been give above incidentally of more or less inaccurate reporting of some of our rarer species. To these must be added the following:—*Lithospermum purpureo-cæruleum*, L., should have "Angl. occ. or.," instead of "Angl. occ. mer."; and *Sibthorpia europæa*, L., "Angl. mer.-occ.," in addition to "Angl. mer." So in the case of *Scrophularia Scorodonia*, L., "Angl. mer." is wrongly added to "Angl. mer.-occ." and "Hibern. (r)"; while under *Trixago viscosa*, Stev., "mer." should be added to "Angl. occ." *Stachys germanica*, L., should have "Angl. (Hants, Kent, Oxf.)," instead of "(Oxfordsh., Bedfordsh.)"; in 'Topogr. Bot.,' Beds is said to need verification. *Rumex conspersus*, Hartm, has "Angl. (Kinross-sh.)," instead of "Scot. (r)," its counties (already known) being Kinross, Fife, and Perth.

There is one instance, *Atriplex littoralis*, L. (and apparently only this one), where a British plant is not recorded as such. The Channel Islands are regarded (as of course they ought to be for botanical purposes) as part of Western France. Russia appears to have more species peculiar to it than all the other European countries put together, a circumstance due no doubt to peculiarity of soil and climate even more than to its immense area. Thus in the one order *Chenopodiaceæ* no less than 32 (or 33) European species are found only in Russia. On the other hand, there seem to be only 6 species in this third Part which are known to occur in every country of Europe, viz., *Prunella vulgaris*, *Polygonum aviculare*, *P. Convolvulus*, *Plantago major*, *Chenopodium album*, *Urtica dioica*, and *U. urens*.

The following slight additions to the countries or parts of countries given for a few continental species are the result of personal observation by the writer of this notice:—*Scrophularia lucida*, L., Ital. bor. (Arenzano). *Antirrhinum latifolium*, DC., Ital. bor. (Pegli). *Veronica Cymbalaria*, Bodard., Ital. bor. (Pegli). *Coris monspeliensis*, L., Ital. bor. (near Capo di Noli). *Globularia cordifolia*, L., Gall. or. (Monetier, Savoy). These were collected in the spring of 1875; the following in the autumn of 1878:—*Euphorbia virgata*, W. K., Germ. occ. (Karthausé, above Coblenz).

W. M. R.

A Year in Fiji. By John Horne, F.L.S. London: Stanford. 1881.

Mr. John Horne, of the Botanical Gardens, Mauritius, has here given us an interesting account of the natural features of the Fiji Islands, from facts collected during his tour through the different islands of the group in 1877. The greater portion of the volume is devoted to matters connected with Botany—the peculiarities of the Flora, the indigenous timber-trees and economic products, suggestions for the introduction of useful plants, and the like; there are also several appendices, one devoted to the native Caoutchouc and its sources, and other points of interest to the economic botanist; and one giving a list of the plants found in Fiji. The usefulness of this last is seriously impaired by one or two peculiarities; in the first place, it is alphabetically arranged; and secondly, it contains a large proportion of names to which "sp. n." or "N. S." are affixed. Mr. Horne tells us that "those species that, at present, are regarded as new are indicated by sp. n. and N. S." Why there should be two distinct methods of indicating one and the same thing does not appear. "It is likely that several of these may be merely varieties of old and well-known species. The figures in brackets are the numbers attached to the specimens, to identify them, in the Royal Herbarium at Kew." It is obvious that a list of this kind is of very little use; and it seems hardly likely that—to take one example—the twenty-two Eugenias to which "sp. n." is affixed are all new, nor, even were such the case, is science in any way benefited by this enumeration of them. Worse still, in some cases specific names (without the slightest diagnoses) are given to the supposed novelties; seven species of *Cyrtandra* are thus specifically named, "N. S." being added to each. It would appear that this practice of publishing names without descriptions is on the increase; but, notwithstanding the implied sanction given to it by Sir J. D. Hooker in the last Kew Gardens Report,* we cannot but regard it as highly reprehensible. The new Ferns of the list were described by Mr. Baker in this Journal for 1879 (pp. 292–300)—a fact which Mr. Horne omits to mention.

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* See 'Journ. Bot.,' 1881, p. 381.

The usefulness of the book as a work of reference is seriously impaired by the badness of the index, as well as by the printing of scientific names in roman letters and without capital initials. Sentences like the following:—"The sides of streams in these dry districts are shaded by such trees as heritiera litoralis, afzelia bijuga, terminalia catappa, kleinhovia hospita, cynometra grandiflora, *cibicibi* (pr. thimbi-thimbi), bamboos, calophyllums, eugenias, &c."—are not agreeable to the eye, and misleading to those who may glance through the pages of the book in search of information which they ought to find pointed out by the index.

J. B.

The student of phenological phenomena will welcome the appearance of 'The Cobham Journals' (London, Stanford, 1881). The expanded title explains the contents of the work: 'Abstracts and Summaries of Meteorological and Phenological Observations made by Miss Caroline Molesworth, at Cobham, Surrey, in the Years 1825 to 1850.' The preparation of the work, which must have involved considerable labour, has devolved upon Miss Eleanor Ormerod, a lady favourably known to naturalists as the author of a very useful 'Manual of Injurious Insects.' The observations relating to plants include "dates of the first flowering of many cultivated plants and flowering shrubs, and of some native plants; first ripening of common garden fruits; dates of foliation and defoliation of a few trees, and of the completed fall of leafage at the end of autumn. Occasional notes are also given of the general state of the crops, as of the first cutting of the hay, first ripening of corn, and first destruction of the more tender garden plants by frost." Miss Ormerod has made her selection from "many scores of thousands" of observations made by Miss Molesworth; she has tabulated these and made them accessible; and to her in scarcely a less degree than to Miss Molesworth herself the thanks of naturalists are due. If a similar task could be similarly executed in connection with the MS. diaries of Gilbert White, which have lately come into the possession of the British Museum, a worthy companion to the 'Cobham Journals' would be the result.

In his 'Lectures on the Vegetable Kingdom, with special reference to the Flora of Australia,' Mr. William Woolls gives much information which must have been very acceptable to the members of the Cumberland [Australia] Mutual Improvement Society, before whom the discourses were delivered. The one which is most interesting to an extra-Australian reader is that on the "Progress of Botany in Australia," beginning with Dampier's landing in 1688, and coming down to the present time, a fitting tribute being paid to Baron Ferdinand von Mueller, whose "merits as a botanist [are] only superseded by his modesty as a man." George Caley's name, by a curious slip, is throughout spelt "Cealey." Mr. Woolls mentions that Bauer's "illustrations of Australian plants are still extant": he might have added that they are preserved in the National Herbarium at South Kensington.

Under the title 'Freaks and Marvels of Plant-Life' (London, S. P. C. K., 1881), Dr. M. C. Cooke gives, in popular form, very readable and accurate accounts of the principal subjects to which Mr. Darwin has devoted so much attention. The greater part of the volume is occupied with the insectivorous plants; then we come to the climbing and sensitive plants, the dispersion of various species, the phenomena classed under the term "mimicry," observations on temperature, &c. All these, if neither aiming at nor containing anything original, will nevertheless introduce the average reader to a series of facts which cannot fail to interest and instruct him. The concluding chapters on "Mystic Plants" and "Flowers of History" are less satisfactory, and the volume would have been none the worse had they been omitted altogether.

Articles in Journals.—December.

Botanical Gazette.—C. E. Bessey, 'The Asparagus for histological study.'—G. Vasey, 'New Grasses' (*Melica Hallii*, *Sporobolus Jonesii*, *Poa purpurascens*).

Botanische Zeitung.—F. Kienitz-Gerloff, 'On the development of the embryo of *Isoetes lacustris*' (1 tab.)—K. Prantl, 'On the nourishment of the prothallus of Ferns and the separation of the sexual organs.'—J. Boehm, 'On the motion of air and water in plants during respiration.'—E. Zacharias, 'On Spermatozoids.'

Botaniska Notiser.—B. Jönsson, 'On the development of the Embryo-sac in Angiosperms.' — E. V. Ekstrand, 'Travels in Nordland and Lapland in 1880.'

Journal of Linnean Society (Botany, xix., Nos. 115, 116).—G. Bentham, 'Notes on *Gramineæ*.'—W. R. M'Nab, 'Report on Arctic Drift Woods collected by Capt. Feilden and Mr. Hart, 1875–6.'

Journal of Royal Microscopical Soc.—L. G. Mills, 'Diatoms from Peruvian Guano' (1 tab.)

Magyar Novenytani Lapok. (Nov.) — F. Schaarschmidt, 'On organic sphærocrystals in *Euphorbiaceæ*, *Rutaceæ*, *Urticaceæ*, and *Palmeæ*.'—T. L. Holnby, 'On *Puccinia malvacearum*.'

Œsterr. Bot. Zeitschrift.—L. Celakovsky, 'On some species of *Bupleurum*.'—F. R. v. Höhnel, 'On the arillus of *Ravenala*.'—J. Murr, 'On the Flora of North Tyrol.'—P. Sintenis, 'Cyprus and its Flora' (contd.)—P. G. Strobl, 'Flora of Etna' (contd.)

Transactions of Linnean Society (2nd Ser., vol. ii., pt. 1).—Count Ficalho and W. P. Hiern, 'On Central-African Plants collected by Major Serpa Pinto' (4 tt.; *Diplorhynchus* (gen. nov. Apocynearum); many new species).

LINNEAN SOCIETY OF LONDON.

November 17th, 1881.—Sir John Lubbock, Bart., in the chair.—Mr. F. Crisp was elected Treasurer, and Sir J. Kirk member of the

Council, thus filling the vacancy caused by the death of Mr. Currey.—Mr. George Murray exhibited a bough of *Pinus Pinaster*, in which the internodes of the lateral branches were suppressed, the result of injury to the axis from which they sprung.—Mr. C. B. Clarke read a paper "On a Hampshire Orchis not represented in 'English Botany.'" This was a pale flesh-coloured or yellowish Orchis of the same section as, but with denser cylindric spike than, *O. latifolia*. By comparison of the authentic specimen and description of Linnæus, and of the specimen in Fries' 'Herbarium Normale,' Mr. Clarke desired to show that the pale Hampshire Orchis is the true *O. incarnata*, L.; and that the *O. incarnata* of Syme and Babington is (as Smith and Sowerby called the same identical plate in Eng. Bot.) *O. latifolia*, L. Mr. Clarke maintained that, at all events, the pale Hampshire Orchis had not yet been figured among English plants.

December 1, 1881.—Sir John Lubbock, Bart., President, in the chair.—Capt. P. Greene, G. S. Jenman, W. Landaw, E. G. Warnford Lock, Rev. T. P. H. Sturges, Lieut.-Col. C. Swinhoe, G. C. Walton, C. S. Wilkinson, G. S. V. Wills, and Rev. G. Wilson, were elected Fellows of the Society.—Mr. J. Harris Stone exhibited dried specimens of *Lychnis Viscaria*, and made some remarks on the plant as a trap for ants. He pointed out that three or four glutinous or sticky rings are situate immediately underneath the nodes in the flowering stalks. Ants climbing the stems are arrested and die in numbers at the sticky zones, and few reach the flowers. In Norway last summer he had observed as many as 95 per cent of the plants with dead and dying ants thereon; and he therefore submits whether the zones are a protection to the flowers, the ants noxious, or that their dead bodies ultimately serve as nutriment and are absorbed by the plant?—Dr. Maxwell Masters read a Note on the Foliation and Ramification of *Buddleia auriculata*. In this plant the leaves are opposite; but between the petioles—one on each side of the axis—is a small leafy auricle, the interpretation of which by descriptive botanists has been as varied as vague. The author seeks to show, from a study of the mode of development and other considerations, that the auricles in question represent leaves of a whorl, so that the verticil consists of two perfect and two imperfect leaves. An additional link between *Loganiaceæ* and *Rubiaceæ* is thus afforded. Further details were given concerning the multiple axillary buds in this plant and the supra-axillary shoots. Some of the peculiarities alluded to are usually explained on the hypothesis of fusion; but the author shows that in this, as in many similar cases, the appearances are due to an arrest of development, in consequence of which parts that should become free, in course of growth, remain inseparate, and in some cases are uplifted with the axis as it lengthens, and are thus removed from their normal position.

December 15.—George Busk, F.R.S., Vice-President, in the chair.—Messrs. W. H. Coffin, E. Milner, and S. H. Parkes were elected Fellows of the Society.—A paper by Dr. Maxwell Masters followed, dealing with a new species of cotton (*Gossypium Kirkii*) from East Tropical Africa. It has an interest historically, from being probably the origin of very numerous cultivated varieties. It was obtained by Sir John Kirk, growing wild at Dar Salam. Dr. Masters regards it as very nearly allied to *G. barbadense*, which is the form most commonly cultivated in Tropical Africa; though along the Nile-valley *G. herbaceum* is that usually in cultivation. According to authorities, cotton was not cultivated in Egypt in ancient times; and the fact that the varieties now grown there are for the most part forms of *G. herbaceum*, suggests the idea that India is the source whence Egypt has derived the cotton—a notion confirmed by various other considerations.—A paper was read for Prof. W. R. McNab, of Dublin, *viz.*, "Note on *Abies Pattonii*, Jeffrey MSS., 1851." The author mentions that the plants known in cultivation under the names of *Abies Hookeriana* and *A. Pattonii* have long been a source of confusion and perplexity both to botanists and horticulturists. He then follows the history how this has occurred, and shows that the late Andrew Murray, in describing a new North-American pine, mixed up in his description the leaf of *A. Pattonii*, Balf., from the Mount Baker range of mountains, with the cone of *A. Hookeriana*, from Scots Mountain, Oregon, and originally collected by Mr. John Jeffrey. Dr. McNab proposes that, as Jeffrey's No. 430, from the Cascade Mountains, named by Balfour *Abies Pattonii* in the 'Oregon Circular,' was unpublished, it should now be referred to *Tsuga Hookeriana*, and the Mount Baker tree be regarded as *T. Pattoniana;* and he further suggests the desirability of a fresh examination of the cones of the latter, as Jeffrey's account of them is somewhat defective.

Botanical News.

We note with pleasure that our friend and correspondent, Mr. A. G. More, has been appointed to the Curatorship of the Museum of Natural History, Science and Art Department, Dublin, in succession to the late Dr. Carte. Mr. More has been connected with the Museum for many years, and his well-deserved promotion cannot fail to give general satisfaction.

Otto Wilhelm Sonder, of Hamburg, died on the 21st of last November, at the age of seventy. Although following the occupation of a chemist, he devoted much of his time to botanical research, His first paper (upon *Cuscuta hassiaca*) appeared in the 'Botanische Zeitung' for 1844, and was speedily followed by others. In 1846 he published his 'Revision of *Heliophila;*' and in 1851 his 'Flora Hamburgensis,' which, although arranged on the Linnean system, is a very useful work. His attention then became directed to the Australian and Cape Floras, and after the publication of several papers upon Australian plants, he undertook, in conjunction with Dr. Harvey, the publication of the

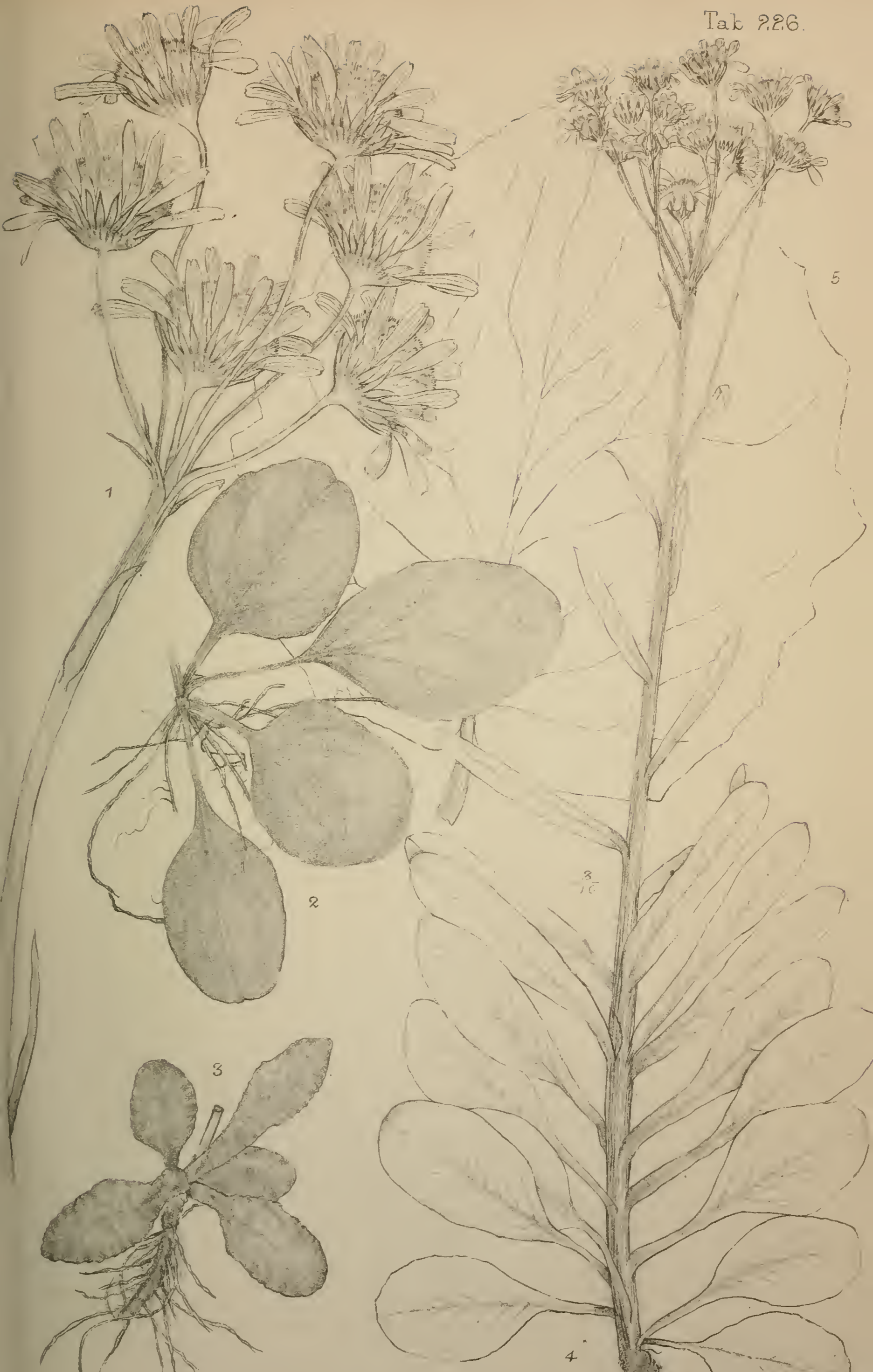
'Flora Capensis,' of which the first volume appeared in 1860. The third volume, bearing the date 1864–1865, brought the work down to the end of *Campanulaceæ;* and is, as all botanists know and regret, the last which has been issued, the death of Dr. Harvey in 1866 having apparently caused the cessation of the work. Rumours of its continuation have from time to time been circulated, and it was understood that Mr. Dyer had undertaken the editorship; but nothing further has been published, although we believe the South African Government has more than once expressed a strong wish that the work should be proceeded with. Dr. Sonder had an extensive knowledge of Algæ, upon which he published several memoirs.

THE extensive British Herbarium of the Natural History Museum has lately been completely rearranged. It is desired to exhibit the distribution of each species in the districts laid down in 'Topographical Botany,' and for this purpose we would invite the co-operation of the readers of this Journal, to many of whom, indeed, the Herbarium is already largely indebted. Good specimens of common plants will usually be welcome, the tendency being too often to collect rarities to the exclusion of common species.

STEUDEL'S 'Nomenclator Botanicus' is a work of considerable utility, even at the present day; but the lapse of forty years since the publication of the second edition has to some extent marred its usefulness. We are therefore glad to learn that a new edition is in contemplation; the cost of its preparation will be defrayed by Mr. Charles Darwin, and the superintendence of its execution has been entrusted to Mr. B. Daydon Jackson, Secretary of the Linnean Society. We have before now adverted to that gentleman's assiduity in similar work, and are sure that he will do his utmost to ensure the greatest possible completeness in his present gigantic undertaking. Its magnitude may be estimated by reflecting that, when Steudel brought out his second volume in 1841, the elder DeCandolle was still living, having then published the *seventh* volume of the 'Prodromus'; and Endlicher's 'Genera plantarum' was a new book a few months old, the 'Mantissæ' and 'Supplementa' not then being existent. The issue of an alphabetical arrangement of the mass of names now current, with their synonyms, will be an important event in botanical literature, and supply an every-day want, which in common with all botanists we have experienced.

A CIRCULAR issued with the December number of this Journal drew attention to a proposed General Index, to include all the volumes up to the end of the present year. Of the utility of an Index of this kind there can, we presume, be little doubt; the absence of such a means of reference to the various Journals published by the late Sir W. J. Hooker materially detracts from their value, and although we have taken pains to make each year's Index to the 'Journal of Botany' as complete as possible, the loss of much time and labour is involved by the necessity of consulting so many separate lists. The number of those who have subscribed to the projected General Index is, however, as yet very small, and unless it is greatly increased the idea of its issue must be abandoned.

Tab 226.



Senecio spathulæfolius, DC.

Original Articles.

ON *SENECIO SPATHULÆFOLIUS*, DC., AS A BRITISH PLANT.

By C. C. Babington, M.A., F.R.S., &c.

(Tab. 226.)

As in the 8th edition of my 'Manual' I have ventured to identify the *Cineraria integrifolia β.* of Smith's 'Flora Britannica' (ii. 895) and the *C. maritima integrifolia* of Davies ['Welsh Botanology,' 79 (1813)],* with *Senecio spathulæfolius* of DeCandolle, it may be well to state my reasons for doing so. But first I may remark that the plant seems to have remained almost unknown from the time of Davies until it was recently again found by Mr. J. E. Griffith, F.L.S., of Bangor; except that the late Mr. W. Wilson, of Warrington, gathered it in "Holyhead Island" in July, 1824; but he does not appear to have made any special remarks upon it, as he did upon so many British plants (see his papers in Hooker's 'Botanical Miscellany' and 'Journal of Botany'). In the year 1832 I supposed that I had obtained evidence that the *C. campestris* of our chalk-hills did, in a very wet season, sometimes become the var. *alpina* of Smith (see Loudon's 'Mag. Nat. Hist.,' v., 88); but I had not then, nor for long after, seen a specimen of Davies's plant. Smith expressed ('Eng. Flora,' iii. 446) much inclination to consider it a distinct species. If he had only seen rather imperfect specimens collected by Wilson, like that now before me, we cannot wonder at his hesitation in doing so. As soon as I found a specimen from Wilson in our Cambridge Herbarium, doubts of the identity of the plant from Holyhead and that of the chalk-hills arose in my mind. The difference between the comparatively gigantic specimens of *C. campestris* (more than 1½ ft. high) gathered here in the very wet season of 1829, which are in my herbarium, and one of which is figured in Loudon's 'Magazine' (*l. c.*, fig. *β.*), and that from Holyhead appeared most manifest. But Wilson's specimen did not furnish the requisite materials for distinguishing the plants. If my late friend Mr. Borrer had succeeded in finding the locality mentioned by Davies—and he searched carefully for it—the question would doubtless have long since been set at rest. At length Mr. Griffith found it, and sent me magnificent specimens of Davies's plant in 1880; he gathered them on a declivity overhanging the sea at Yr-hen-borth, near Holyhead. One of these specimens is 25 inches high, has 18 or 20 stem-leaves, and a corymb of 16 large flowers. On placing Mr. Griffith's specimens by the side of the *S. spathulæfolius* of F. Schultz ('Herb. Norm.,' 690) no doubt of their identity could, I think, remain. Also I have specimens of manifestly the same plant (all named *S. spathulæfolius*) from C. H. Schultz-Bipontinus, and Wirtgen ('Herb. Pl. Crit.,' 606). The plate also in Reichenbach's 'Iconogr. Botan.' (126) clearly represents our plant, but that in his 'Icones Fl. Germ.' (xvi., 87) is very unsatisfactory. It is quite plain, from the description, that Godron ('Fl. Fr.,' ii., 122) describes our plant, although he and other authors include plants with much more lanceolate leaves, of which I have several continental examples. Our smaller specimens are almost exactly like those of both the Messrs. Schultz and the plate in the 'Iconographia'; but the magnificent one sent by Mr. Griffith is far more beautiful, and more completely justificatory of the name than any plates or specimens accessible to me.

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* [It may be useful to append Davies's account of the plant. He says, "It grows on declivities above the sea, at Porth-y-pistill, and Porth-y-felin, near Holyhead. There is something singular in the particular attachment of this plant to its maritime situation; although it must for ages have annually ripened its seed, on the south-west side of this country, from which point the wind blows above three-fourths of the year, and must consequently convey the downy seed plentifully into the country, yet we never see a plant of it at any distance from its favourite ground, though there is a good deal of uncultivated land near, where it might be propagated without interruption. The common size of the plant is from one to two feet; it sometimes exceeds even that." A specimen from Davies is in the National Herbarium at South Kensington.—Ed. Journ. Bot.]

It will be seen that in the 'Manual' I have depended chiefly upon the decidedly ovate-spathulate lower leaves, and the peculiar sessile clasping stem-leaves, which are often nearly but broadly linear, and are much widened at and near the clasping base. The seedling plants form a beautiful rosette of large leaves which in cultivation (if sheltered from the weather) continue through the winter. In an exposed specimen before me they are dying away; in a sheltered one they are now (Dec.) as beautiful and fresh as ever. These leaves are not represented in any of our illustrated works, and hardly by any of the specimens in herbaria. On the living young plants before me they are often 3 in. long by 2½ in. broad, with short slightly-winged stalks only 1 in. long. They have a few strong distant dentitions, which probably represent the "numerous broad teeth" of Smith's description. My specimen from Mr. Wilson has only an irregular edge. But these teeth become very indistinct on the succeeding leaves, or even quite disappear, or are represented by distant denticulations. Exactly the same is found to be the case on continental specimens. But on our specimen from Wirtgen ('Pl. Crit.,' 606) some of the leaves might be described as crenate, and others as dentate. It appears, therefore, that this dentition is not a constant character. At the time of flowering, which is often apparently not until the third year, these primary leaves have disappeared, and large spathulate blunt leaves spring from the stem, close to its base, and seem radical at first sight. They are 4 in. long by 2 in. broad, and have a haft 1–2 in. long; the hafts of the succeeding leaves become gradually broader as we ascend the stem, until near the corymb they are very broadly linear, with enlarged clasping bases. The leaves are all more or less woolly on both sides, The stem is woolly in one of my specimens (25 in. high), which bears as many as twenty stem-leaves; another very much smaller specimen (15 in. high) has ten stem-leaves. The foreign specimens vary in size in the same manner, some of them being even of greater height; they have also similar leaves, except that in most cases the lowest leaves are wanting, the primary always; and those few of those leaves that remain are lengthened out similarly to those of our plant, probably by the dense herbage amongst which they seem to have grown. I have not found any essential difference in the heads or florets; for the colouring of the tips of the phyllaries does not seem constant, neither does the quantity of wool upon them; but the phyllaries of *S. campestris* are much more commonly glabrous, except quite at their base, whilst those of *S. spathulæfolius* are nearly always woolly, except at their more or less coloured tips. Garcke distinguishes the plant by the shape of the early leaves, as I have done; he describes those of *S. spathulæfolius* as ovate, with a subtruncate base, the following being longish-ovate, with broadly-winged cuneate petioles; of *S. campestris* as ovate or roundish, with a cuneate petiole, the following being oblong and not narrowed below.

When visiting Mr. Backhouse's private garden at York, in September last, he asked me to name a plant which he had brought from high situations having a northern exposure, a few miles from Mickle Fell, in N.W. Yorkshire, where he had found it abundantly; his growing plants exactly resembled those in our Botanic Garden derived from Holyhead, and I had no hesitation in naming them *S. spathulæfolius* before he told me from whence he had obtained them. This is a most interesting discovery of my acute and observant friend, who has detected so many interesting plants in that wild and elevated region; he remarked especially that the plant was not to be found, except with a northern exposure; extending to the top of a ridge on that side, but not spreading over it to the southern slope in a single instance. The locality in Wales to which I was taken by Mr. Griffith is on a cliff about 40–50 feet above the sea, and having, I believe, a north or north-west exposure. Seedlings which I brought from there in 1880 have not flowered in 1881, and retain their beautiful primary leaves, which are only now dying slowly away.

I was much pleased to find the same plant bearing the name of *S. spathulæfolius* flowering in our garden in 1881; the curator received it from Mr. Max Leichtlin, of Baden-Baden, with that name. This confirmation of the name which I had given to our plant was most satisfactory.

Mr. Backhouse considers his Yorkshire plant as alpine, and the Welsh a maritime form of it, and both different from *S. spathulæfolius*, but I cannot agree with him.

Mr. Griffith believes that his plant is biennial, for such he finds it to be in his garden; he says that it flowers in the second year, and then dies down completely. Certainly the continental plant is perennial. The German plant in our garden has flowered this year, and shows no signs of dying. If the Welsh plants prove to be biennial, it will be a very curious fact, for Mr. Backhouse's Scottish plant is perennial.

This plant flowers in May and June in Wales, as I learn from Mr. Griffith; and the flowers are all over before the commencement of July.

P.S. (Jan. 1882).—A seedling plant brought from Wales in Aug. 1880, which had only the long-stalked leaves, produced the large short-stalked radical leaves in the following spring, and retained them through the summer. They have now disappeared, and fine large buds, clothed with dense white wool, remain. This has also happened with seedlings raised at Cambridge in 1881, which now have only similar buds. It will be of much interest to see what will happen to these plants in 1882.

Description of Plate 226.—*Senecio spathulæfolius*, DC.—Fig. 1. Head of inflorescence (nat. size), from Davies' specimen in Herb. Mus. Brit. 2. Seedling (reduced one-half). 3. Radical leaves of mature plant (reduced one-half). 4. Full-grown specimen (three-tenths nat. size). 5. Leaf of seedling grown in garden from wild seed (nat. size). 2—5 from Prof. Babington's Herbarium.

SPICILEGIA FLORÆ SINENSIS: DIAGNOSES OF NEW, AND HABITATS OF RARE OR HITHERTO UNRECORDED CHINESE PLANTS.

By H. F. Hance, Ph.D., Memb. Acad. Nat. Cur., &c. &c.

(Concluded from p. 2.)

30. *Lysimachia* (*Ephemerum*) *barystachys*, Bunge.—In collinis prope Kiang-su, circ. Chin-kiang, m. Maio 1880, leg. T. L. Bullock. This had not hitherto been recorded south of the Shan-tung promontory, which is upwards of five degrees to the north of the present station.

31. *Lysimachia* (*Nummularia*) *Christinæ*, Hance.—Juxta I-chang, prov. Hu-peh, Apr. 1879, leg. T. Watters; circa Chung-king, prov. Sz-chu'an, vere 1881, invenit E. H. Parker. Only previously gathered in the neighbourhood of Ning-po.

32. *Styrax Fortuni*, *mihi*—(*Cyrta agrestis*, Miers, Contrib. Bot. i. 181 vix Lour.)—In collibus circa Chin-kiang, prov. Kiang-su, m. Maio 1880, coll. Bullock. The leaves are elliptic-oblong, and abruptly acuminated, rather than elliptic, as described by Miers; but the plant agrees so very well with his character that I have no doubt it is identical with Fortune's, of which I have seen no authentic specimen. The flowers are generally 2–3 fasciculate along the leafy raceme-rachis, and the corolla-segments are but very slightly imbricate. I think it very improbable that Loureiro's *Cyrta agrestis*, which Miers had not seen, is identical with this plant; it is described as having ovate leaves. I agree with Prof.

Asa Gray (Proc. Amer. Acad. v. 326), that *Styrax* is best divided into two subgenera or sections, *Eustyrax* and *Strigilia*, the latter including *Cyrta*.

33. Jasminum Mesnyi, *sp. nov.*—Suffruticulus 3–4-pedalis, glaberrimus, ramis angulatis vimineis, foliis synanthiis oppositis trifoliolatis petiolo 4-lineali articulatis foliolis oblongis v. oblongo-lanceolatis papyraceis venis inconspicuis utrinque opacis subtus pallidis apice mucronatis terminali majore 2 poll. longo 5–7 lin. lato basi in petiolulum bilinealem cuneato lateralibus 1–1½ poll. longis 3½–5 lin. latis sessilibus, floribus axillaribus solitariis pedunculo 4–5 lineali paria 2–3 bractearum oblongarum calyci æquilongarum gerente fultis, calycis lobis lineari-oblongis acuminatis 3 lin. longis tubum campanulatum duplo superantibus, corollæ aureæ tubo 5½ lin. longo lobis latis obtusis 6 lin. longis, staminibus stylo longioribus corollæ tubo æquilongis.

Prope Mei-chu-chiu, prov. Kwei-chau, alt. s. m. 6000 ped., d. 11 Aprilis 1880, legit W. Mesny, quo teste, in variis provinciæ locis, hieme præsertim læte florens, viget. (Herb. propr. n. 21211.)

Appears quite distinct from its near ally *J. nudiflorum*, Lindl., by its synanthous leaves, with much larger narrowly oblong leaflets, and by its corolla being only half the size.

34. *Forsythia viridissima*, Lindl. — Juxta oppidum Shi-fung, prov. Kwei-chau, alt. 6500 ped., d. 10 Aprilis 1880, leg. W. Mesny.

35. *Osmanthus fragrans*, Lour.–In montosis provinciarum Kwei-chau atque Sz-chu'an, sponte nec raro vigentem, altitudinemque 15 pedum adtingentem, mensibus Aug. 1879, Sept. 1880, invenit W. Mesny. Leaves narrower and flowers smaller than in the cultivated plant.

36. *Buddleia* (*Neemda*) *madagascariensis*, Lam.—Prope I-chang, prov. Hu-peh, Apr. 1880, legit T. Watters. New, I believe, to China.

37, *Gentiana scabra*, Bge., *β. Bürgeri*, Maxim. ?—In locis umbratis collium siccorum, Ning-po, rara, d. 7 Sept. 1877, leg. Hancock. I am very doubtful as to this being referable to the Japanese plant, of which no diagnosis has, I believe, been given. The flowers are solitary or in pairs, and the leaves, which are ovate-lanceolate, are less approximate than in *G. septemfida*, Pall. ! *G. Boissieri*, Schott ! and *G. gelida*, M. B. ! next which *G. scabra* is stationed.

38. *Swertia* (*Ophelia*) *diluta*, Benth & Hook. f.—In collibus siccis ditionis Ningpoensis copiose, d. 7 Sept. 1877, flor. et frf. legit W. Hancock. I have never before seen specimens from any locality south of Chi-fu, by the Shan-tung promontory. The collector describes the flowers as pale grey, and streaked. They are usually pentamerous in all my specimens.

39. *Mazus stachydifolius*, Maxim.—I-chang, prov. Hu-peh, vere 1879, coll. Watters; circa Chin-kiang, Maio 1880, leg. Bullock.

40. *Æginetia pedunculata*, Wall.—Ad ripas fluvii, prope oppid. Liu-chu, prov. Kwang-si, d. 20 Junii 1879, coll. W. Mesny. Only hitherto known from the hill districts of India.

41. *Catalpa Bungei*, C. A. M.—Frequens ad latera collium, Ning-po, prov. Che-kiang, 29 Apr. 1879, altitudinem 15–20 ped.

adtingens; W. Hancock; in prov. Kwei-chau, Apr. 1880, leg. W Mesny.

42. *Prunella vulgaris*, Linn.—In vicinibus oppidi Chin-kiang, prov. Kiang-su, Maio 1880, coll. Bullock; juxta urb. Chung-king, prov. Sz-chu'an, invenit E. H. Parker, vere 1881. The authors of the 'Genera Plantarum' have given the sanction of their authority to the orthography *Brunella* for this genus. Of the older botanists some wrote *Brunella*, some *Prunella*, as may be seen by the citations of Linnæus (Hort. Cliffort. 316); but he himself definitively adopted the latter name, and the existence of the universally recognised genus *Brunellia*, in Simarubaceæ, seems to me a sufficient reason for following him.

43. *Marrubium* (*Lagopsis*) *incisum*, Benth.—In collidus circa Chin-kiang, prov. Kiang-su, Maio 1880, coll. Bullock. Finer and more luxuriant specimens than any I have seen from Peking.

44. *Phytolacca* (*Pircunia*) *acinosa*, Roxb.—In collibus circa Chin-kiang, prov. Kiang-su, Maio 1880, leg. Bullock.

45. *Machilus Grijsii*, Hance.—In prov. Cantonensi, secus fl. Lien-chau, m. Martio 1881, coll. rev. B. C. Henry. Only known hitherto from Fo-kien.

46. *Lindera* (*Sassafrimorpha*) *triloba*, Bl.—In umbrosis montanis agri Ningpoensis, exeunte Maio 1877, raro crescentem invenit Hancock. Leaves only, and these considerably larger than in an authentic specimen from the Leyden Museum.

47. *Elæagnus umbellata*, Thunb.—Chin-kiang, prov. Kiang-su, Maio 1880; Bullock.

48. *Securinega ramiflora*, Müll.-Arg.—In collibus, Chin-kiang, prov. Kiang-su, Maio 1880, leg. Bullock. I have never before seen specimens from any locality south of the Peking mountains.

49. *Microdesmis caseariifolia*, Planch.—In silvis ad Ting-ü-shan, prov. Cantonensis, exeunte Maio 1867, coll. T. Sampson.

50. *Ficus* (*Eusyce*) *parasitica*, Kön.?—Secus fl. West River, prov. Cantonensis, m. Jun. 1865, coll. T. Sampson. This agrees well with Miquel's description (Ann. mus. bot. Lugd.-Bat. iii. 276) and Wight's figure (Icon. pl. Ind. or. ii., t. 652), but I have no authentic specimens for comparison.

51. *Debregeasia edulis*, Wedd.—Juxta I-chang, prov. Hu-peh, m. Aprili 1880, leg. am. T. Watters. Now first recorded from the Chinese continent, but gathered in Formosa by Oldham.

52. Salix (*Pleiandræ, tropicæ, tetraspermæ*), Mesnyi, *sp. nov.*—Arbuscula 12-pedalis, foliis membranaceis ovato-ellipticis basi rotundatis vel subcordatis cuspidato-acuminatis acute crenatis glaberrimis rete venarum venularumque utrinque elevatarum notatis 4–4½ poll. longis 1¾–2½-poll. latis petiolo ½–¾ pollicari, amentis masculis breviter pedunculatis basi nudis bipollicaribus densifloris, squamis subrotundis dorso parce pilosis margine dense ciliatis, staminum 6–10 filamentis inferne pilosis, amentis femineis longius pedunculatis laxiusculis 3-pollicaribus basi foliis 2–3 fultis, utriusque sexus rachi cinereo-tomentosa, capsulis iam apertis ovoideo-lanceolatis glaberrimis pedicello iis 4-plo breviore suffultis, squamis ovatis acutis glaberrimis capsula triplo brevioribus.

Ad ripas limosas fl. Cantonensis, m. Jan. 1870, stirpem masculam primum detexit Sampson; femineam in prov. Kwang-si, juxta fl. Liang-fung m. Junio 1879, demum invenit W. Mesny. (Herb. propr. n, 16446.)

This is the plant recorded, in the fourth fasciculus of these Spicilegia, as doubtfully referable to *Salix populifolia*, Anderss.; but now the fruit is discovered, it is evident this was a mistake. It differs from all the specimens of *S. tetrasperma*, Roxb., I have seen, Chinese or Indian, in the shape of its leaves, the shorter male catkins, shape of the scales, and some other particulars; but it may prove to be only a variety of that species.

53. *Abies Fortunei*, Lindl.—Juxta Fu-chau, Maio 1873, legit filius Alfredus; vere 1881, W. Hancock. I believe Lindley was quite right in referring this handsome tree to *Abies*, though Carrière has made a special genus—*Keteleeria*—of it. The cone-scales are not persistent, as stated by Parlatore, but they do not fall so early or so readily as usual in the genus.

54. *Anæctochilus.*—In spongiosis umbrosissimis ditionis Ningpoensis raro vigentem, d. 5 Octobris, 1877, invenit am. Hancock. This seems close to *A. Roxburghii*, Lindl., and *A. Reinwardtii*, Bl., but has only two smaller flowers, and is far less robust than either, as figured in Blume's splendid plates (Fl. Jav. iv., t. 12 & 12 b.); the fimbriæ are long and setaceous, as in the last-named species. I have only two specimens, and cannot make a full examination without destroying these. According to the collector, the blossoms are pinkish white. I have seen an *Anæctochilus* in the Canton province, but failed to keep it alive, or get it to flower; and I do not know if it is identical with the Ning-po plant.

55. *Polygonatum officinale*, All.—In vicinibus opp. Chin-kiang, prov. Kiang-su, Maio 1880, leg. Bullock. The most southerly Chinese station known to me.

56. *Cheilanthes rufa*, Don.—In rupe calcarea ad margines cataractæ, juxta pagum Ling-kwai, secus fl. North River, prov. Cantonensis, d. 30 Martii 1881, coll. rev. B. C. Henry. New to the Chinese flora. The specimens are robust and well developed. Mr. C. B. Clarke has remarked (Trans. Linn. Soc., 2nd ser. i. 457) that this fern always grows on limestone in India.

MORE SIDE-LIGHTS ON THE STRUCTURE OF COMPOSITES.*

By Maxwell T. Masters, M.D., F.R.S.

The Tubulifloral division of Composites is marked, as is well known, by the presence of ligulate ray-florets, which are very generally female or neuter, and by tubular disc-florets, which are usually hermaphrodite, at least structurally. When, as often happens in cultivation, the florets of the disc lose their normally

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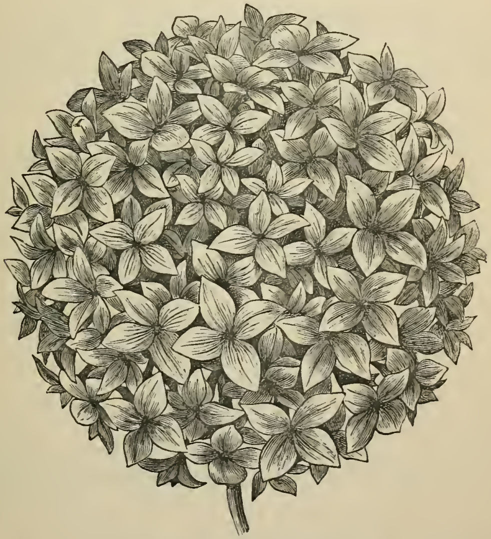
[*] See Journ. Bot., 1879, pp. 33—36.

regular tubular form, and assume a ligulate appearance, the whole flower-head is loosely spoken of as "double." But, as "doubling" in the more restricted sense of the term is the result either of an actual multiplication of the corolla, or of the substitution of petals for stamens, it is clear that the term is not correctly applied in the case of the so-called double Asters, Dahlias, Sunflowers, &c. In such flowers, the change may briefly be stated to be that from a dimorphic to a homomorphic condition of the florets, using these terms purely in a morphological sense. Recently, however, I have had the opportunity of examining some flowers of a cultivated Dahlia which were truly double. All the florets, with the exception of a few in the centre, were ligulate, as is customary in so-called double Dahlias, but each one of these ligulate florets enclosed within it either a second floret or one, two, or three petaloid scales, separate or more or less united at the edges. Where there are two or three of such supplementary pieces, they are so arranged as to overlap by one edge, while they are overlapped by the adjacent scale on the other edge. It was a matter of interest to determine to what this double condition was due. Among the Gamopetalæ a very common form of doubling, and the only one to which the term doubling or duplication should be properly applied, is that in which the corolline whorl is repeated once, or oftener, so that there are two or three, or more, tubular corollas intervening between the calyx and the stamens. Instances of this occur in hose-in-hose primroses, Daturas, &c. At first glance it appeared as if the doubling of the Dahlia in question was due to this change, so perfectly did the inner corolla reproduce the characters of the outer one; but on examining a large number of the florets towards the centre of the head, it became apparent that the change in question was due not to any mere repetition of the corolla, but to the presence of the stamens more or less completely in the guise of petals, and eventually I was able to trace a consecutive series of structures passing from an ordinary petal, with numerous intermediate conditions, in which the phyllonce was neither true petal nor true stamen, to the condition of a perfect stamen. It is clear, then, that this specimen affords an instance of true doubling or petalody of the stamens, and, so far as I have been able to ascertain, it is the first case of the kind on record among Composites.

It is probable that the ligulate form of the corolla is due to the pressure caused by the large number and crowded arrangement of the flowers and bracts in the head; and the same reasons may possibly account for the customary non-development of the stamens in these flowers. Space is thereby saved, while the flattened florets, lengthened into signal flags, serve as guides for insect-visitors, and owing to their value for this purpose, their perpetuation is assured. It is interesting to see in this case, where stamens are developed, that they are made to assume a flattened petaloid guise, and are so packed as to occupy the least possible space. In connection with this latter point, it is interesting to notice that in opening a very young tubular floret with the dissecting needle, the triangular connectives to the anther may be seen nestling within the somewhat hooded tips of the petals; so that, at first sight, the stamens appear to be superposed to the petals as they are in Primroses, but a little further examination shows that the filaments originate from the tube of the corolla, alternate with its lobes in the ordinary manner.

In the Dahlia above described, it was the ligulate condition of the corolla which was exaggerated. In such flower-heads a much larger number of the florets than usual become ligulate, and physiologically emasculate. I have now to refer to some specimens of *Gaillardia picta*, in which precisely the opposite condition of things was met with. This plant belongs to the same great group of Composites, with strap-shaped imperfect ray-florets and tubular 4- or 5-toothed disc-florets, with stamens and pistils structurally perfect. In the specimens to which I now more particularly refer (see figure), the ligulate florets were completely absent; all the florets had a 4- or 5-lobed tubular corolla, but the lobes were much longer than usual; the four or five constituent lobes of the corolla were in fact nearly, if not quite, as large as those of the ligulate corolla.



Taking the two cases in conjunction with what we know of the mode of development and structure of the order generally, it is reasonable to suppose, without drawing too much on the imagination, that the Composites are a highly specialised offshoot from that large assemblage of plants which Linnæus would have grouped under *Pentandria Digynia*, itself probably derived from an earlier or possibly concurrent type, which would have been included in former days under *Pentandria Pentagynia*. What was the exact line of descent is at present so much a matter of mere surmise that it is hardly profitable to enter upon it here.

NOTES ON THE FLORA OF MID-SOMERSET.

By the Rev. R. P. Murray, M.A.

In December, 1875, Mr. Baker communicated to the 'Journal of Botany' a list of plants noticed by him as growing in the neighbourhood of Somerton, the ancient capital of Somerset, during a fortnight's visit late in the summer of that year. I propose now to lay before the readers of this Journal some additional notes on the Botany of this district, and of the country lying immediately to the north, which is drained by the River Brue. In its upper portion the valley of the Brue much resembles that of the Parrett: below Glastonbury the character of the valley changes, and we find ourselves on extensive peat-moors, which still afford many scarce plants, though the number of these is gradually diminishing. At present, however, I do not intend to deal with the Botany of the moors.

Ranunculus trichophyllus, Chaix. — Very common in ditches about Baltonsboro'. Some specimens from this locality have been referred doubtfully by Prof. Babington to *R. radians*, Rev.

R. Drouetii. F. Schultz.—I find what I believe to be this species in one ditch close to Baltonsboro'.

R. penicillatus, Hiern.—In the Brue at Castle Cary.

R. circinatus, Sibth.—Very common in this district.

R. hederaceus., L.—In a pond at Kingweston.

R. sceleratus, L.—Abundant below Glastonbury, but apparently scarce higher up the valley.

R. arvensis, L.— Common in arable land, Keinton-Mandeville. Baltonsboro', rare.

Aconitum Napellus, L.—In plenty on both sides of small stream between Milton-Clevedon, and Batcombe.

Nuphar lutea, Sm.—Common in the Brue.

Chelidonium majus, L.—About most of the villages.

Sinapis nigra, L.—Common by the Brue.

Malachium aquaticum, Fr.—Very common in the valleys.

Hypericum hirsutum, L.—One of the characteristic plants of the district.

Geranium pratense, L.—Common.

G. columbinum, L.—Fields, Charlton-Mackrell.

G. lucidum. L.—Baltonsboro'. Otherwise scarce in the district.

Astragalus glycyphyllos, L.—In a hedge below the wood to the right of Snaphill, as you go from Somerton.

Vicia gracilis, Lois.—Kingweston.

Lathyrus Aphaca, L., and *L. Nissolia*, L.—I am informed by the Rev. Gilbert Smith that he had gathered both these plants close to the vicarage, Barton-St. David; they are, however, no longer to be found there.

L. sylvestris, L.—Between Bruton and Milton-Clevedon. Also near Wells, and at Stowel, near Templecombe.

Hippocrepis comosa, L.—South slope of the Polden Hills, in the parish of Compton Dundon, and on Green Down.

Geum intermedium, Ehrh., and *G. rivale*, Ehrh.—Cogley Wood, Bruton.

Rosa micrantha, Sm.—A few bushes by " Marshal's Elm."

R. bibracteata, Bast. (*R. systyla*, Woods). — Barton-St. David. One bush.

Lythrum Salicaria, L.—Very common by the Brue.

Cotyledon Umbilicus, L.— Walls about Baltonsboro' and Butleigh.

Apium graveolens, L.—Baltonsboro', common.

Petroselinum segetum, Koch.—Cornfields, Charlton-Mackrell.

Bupleurum rotundifolium, L.—With the last.

Œnanthe pimpellinoides, L.—Baltonsboro'; Walton.

Œ. crocata, L.—Baltonsboro'.

Caucalis daucoides, L.—Cornfields, Charlton-Mackrell.

C. latifolia, L.—" Walton," *Rev. J. G. Hickley*. Once found.

Torilis infesta, Spr.—Charlton-Mackrell.

Conium maculatum, L.—Very abundant everywhere.

Viscum album, L.—Common in the district.

Sambucus Ebulus, L.—Charlton-Mackrell.

Viburnum Opulus, L.—Common on the hills.

Asperula odorata, L.—Butleigh Wood.

Galium tricorne, With.—Charlton Mackrell.

Rubia peregrina, L.—Barton-St. David.

Valerianella dentata, L.—Frequent on the hills in cultivated ground.

Dipsacus sylvestris, L.—Very abundant.

Erigeron acris, L.—Barton-St. David, and by the road along the ridge of the Polden Hills.

Inula Helenium, L.—Walton.

I. Conyza, L.—Butleigh Wood.

Bidens tripartita, L.—Baltonsboro'.

B. cernua, L.—West Pennard.

Anthemis Cotula, L.—Butleigh.

Chrysanthemum segetum, L.—Extremely rare in this district. I have only seen one specimen at Barton, which had, no doubt, been accidentally introduced.

Senecio erucifolius, L. — Much more common here than *S. Jacobæa*.

S. saracenicus, L.—With *Aconitum Napellus*, near Milton Clevedon, and by the Brue, close to Castle Cary station.

Arctium majus, Schk.—Baltonsboro'.

A. intermedium, Lange.—Common throughout the district.

Silybum Marianum, Gærtn.—Sandpit near the top of Glastonbury Tor.

Cichorium Intybus, L.—Barton-St. David.

Picris hieracioides, L.—One of our characteristic plants.

Helminthia echioides, Gaertn.—Common.

Hieracium tridentatum, Fr.—In a lane leading up the hill from West Pennard station.

Campanula patula, L.—By the roadside, about half-way between Castle Cary and Cole. This confirms the statement in 'Bot. Guide.'

Specularia hybrida, A. DC.—Butleigh, *Rev. Gilbert Smith.*

Chlora perfoliata, L.—Polden Hills.

Gentiana Amarella, L.—With the last, and at Barton.

Cuscuta Trifolii, Bab.—Not uncommon.

Lithospermum purpureo-cæruleum, L. — Southern slope of the Polden Hills, in the parish of Compton-Dundon.

Solanum nigrum, L.—A weed in the vicarage garden, Butleigh.

Hyoscyamus niger, L.—A plant of this appeared in my garden on some soil which had been washed down by the Brue.

Orobanche minor, Sutt.—Frequent about Barton.

Digitalis purpurea, L.—Scarce in this neighbourhood. I have seen it on the Polden Hills, and in West Pennard.

Linaria Elatine, Mill.; *L. spuria*, Mill.; *L. minor*, Mill.—Keinton-Mandeville and Barton.

Mentha viridis, L.—Roadside between Kingweston and Butleigh monument.

M. piperita, Sm.—Baltonsboro'. Probably escaped from some farm-house garden.

Lycopus europæus, L.—Baltonsboro'.

Calaminthe officinalis, Moench.—Kingsdon, *Rev. Gilbert Smith.*

C. Acinos, Clair.—Charlton-Mackrell.

Galeopsis Ladanum, L.—Common in cornfields about Charlton-Mackrell.

Hottonia palustris, L.—Baltonsboro', &c. Common.

Lysimachia vulgaris, L.—Baltonsboro'. Very local.

L. Nummularia, L.—Common.

L. nemorum, L.—Cogley Wood, Bruton.

Anagallis cærulea, L.—Baltonsboro'. One plant.

Samolus Valerandi, L.—Walton.

Chenopodium polyspermum, L.—A garden weed, Baltonsboro'.

C. urbicum, L.—Common on rubbish heaps.

C. ficifolium, Sm.—Baltonsboro'.

C. rubrum, L.—Rubbish heap at West Pennard.

Daphne Laureola, L.—Occasional in the district.

Euphorbia platyphylla, L.—Kingweston; Barton.

E. Lathyris, L.—Baltonsboro'. A weed in cultivated ground.

Humulus Lupulus, L.—Very common in many places.

Paris quadrifolia, L.—Copley Wood, Kingweston.

Hydrocharis Morsus-ranæ, L.—Ditches about Baltonsboro'.

Orchis pyramidalis, L.—Keinton-Mandeville; Snaphill.

Habenaria viridis, Br.—Kingweston.

H. chlorantha, Bab.—Barton.

Ophrys apifera, L.—Barton; Polden Hills.

Spiranthus autumnalis, Rich.—Here and there along the ridge of the Polden Hills.

Neottia Nidus-avis, Rich.—"Cogley Wood, Bruton," *Miss B. Carey.*

Epipactis latifolia, All.—With the last.

Allium vineale, L.—Barton; Kingweston.

Butomus umbellatus, L.—Barton; Baltonsboro'.

Lemna trisulca, L., and *L. polyrrhiza*, L.—Baltonsboro'.

Potamogeton pusillus, L., var. *tenuissimus*.—Baltonsboro'.'

Carex axillaris, Good.—Baltonsboro'.

Setaria viridis, Beauv.—Rubbish heap, Baltonsboro. Probably a casual.

Asplenium Adiantum-nigrum, L. — Scarce, and always much dwarfed.

Ophioglossum vulgatum, L.—Butleigh.

CONTRIBUTIONS TO THE FLORA OF CENTRAL MADAGASCAR.

By J. G. Baker, F.R.S.

(Continued from p. 17.)

Xerochlamys, gen. nov. *Chlœnacearum*.

Involucel a large persistent coriaceous pilose cup with 5 deltoid teeth. Sepals 3, free, obovate, about as long as the involucel. Petals 5, obovate, spathulate, much imbricated in bud, nearly twice as long as the sepals. Stamens indefinite (about 20), monadelphous at the base; filaments rather flattened; anthers minute, subglobose, dorsifixed. Ovary globose, 3-celled, pilose, with several ovules in a cell; style simple, persistent, elongated, with a large mushroom-shaped stigma. Fruit a capsule about the size of a pea, surrounded by the withered involucel and sepals. Seeds about 3 in a cell, hairy, angular. Allied to *Leptolæna*, Thouars, from which it differs by its dry involucel, indefinite stamens, and ovary with more than 2 ovules in a cell.

Xerochlamys pilosa, Baker.—A small prostrate much-branched shrub, with slender pilose terete flexuose ultimate branchlets. Leaves alternate; petiole very short; stipules minute, deciduous; blade oblong, entire, ½–¾ in. long, obtuse, rounded at the base, green and thinly pilose above, densely coated with bright brown hairs beneath, the veining quite hidden. Flowers solitary, terminal, subsessile. Involucel campanulate, ¼ in. diam., coated with brown hairs like the under side of the leaves, the teeth much shorter than the entire part of the cup. Sepals obovate, sickly on the outside. Petals obovate-spathulate, rose-red, ⅝ in. long, ¼ in. broad. Ovary densely pilose, finally a little longer than the involucel, which it splits down the side as it ripens; style glabrous in the upper half, as long as the ovary, persistent.—On the top of a blerk stony hill in the west of the Betsileo-country, *Baron* 134!

Pavonia Bojeri, sp. n.—*Urena? hispida*, Bojer MSS.—An erect perennial, several feet high, with slender terete densely hispid branchlets. Leaves with long petioles, the blade 2–3 in. long and broad, deeply cordate at the base, shallowly palmately 3-lobed, the lobes deeply irregularly dentate, both surfaces densely persistently hispid. Flowers on very short peduncles, solitary in the axils of the lower leaves and 3–4 aggregated at the top of the branches. Divisions of the epicalyx linear, $\frac{1}{4}$–$\frac{1}{3}$ in. long. Calyx hispid, $\frac{1}{3}$ in. long, the deltoid teeth equalling in length the campanulate tube. Petals red, more than twice as long as the calyx. Column of stamens rather shorter than the petals. Fruit-carpels 5, glabrous, reticulated on the back, each with 3 large awns armed with reflexed bristles.—Roadsides in the province of Imerina, *Parker! Baron* 350! and gathered before by Bojer. Native name, *Amiandahy*. Allied to *P. urens*, Cav., and *P. Columella*, Cav.; Jacq. Hort. Schœn. t. 492.

Kosteletskya madagascariensis, sp. n.—A shrubby perennial, 2–3 ft. high, with slender pilose terete branchlets. Leaves long-petioled, cordate-ovate, acute, 1–$1\frac{1}{2}$ in. long, deeply dentate, green and pilose on both surfaces. Flowers solitary in the axils of the leaves, on slender ascending pilose peduncles 1–$1\frac{1}{2}$ in. long. Epicalyx of 5 minute linear bracts. Calyx pilose, $\frac{1}{6}$ in. long; lanceolate-deltoid teeth longer than the campanulate tube. Corolla small, light pink; petals obovate, emarginate. Stamens inserted nearly all the way up the tube. Capsule finely pilose, shorter than the calyx, with a single greyish oblong-triquetrous pilose mottled seed $\frac{1}{12}$ in. long in each cell.—In a wooded valley in West Betsileo, *Baron* 121! Flowers in January. Another unnamed species was gathered by Dr. Lyall long ago in Central Madagascar, with retrorsely hispid branchlets, suborbicular leaves shallowly palmately 3-lobed, and more numerous bracteoles to the epicalyx; and a third has just been described by Dr. Garcké in 'Reliquiæ Rutenbergianæ.'

Hibiscus (*Lagunæa*) Parkeri, sp. n.—A diffusely branched annual herb, with shortly pilose terete slender branchlets. Leaves long-petioled, suborbicular or broad ovate, shallowly cordate, entire or 3-lobed to the middle, 1–$1\frac{1}{2}$ in. long, conspicuously crenate, green and slightly hairy on both surfaces. Flowers solitary in the axils of the lower leaves on short pedicels, and 2–3 crowded at the end of the branches. Epicalyx none. Calyx $\frac{1}{4}$ in. long, green, obscurely pilose; teeth lanceolate-deltoid, twice as long as the campanulate tube. Petals pale pink, obovate, twice as long as the calyx. Fruit-carpels hispid, cuspidate, rather longer than the calyx, with numerous small, glabrous, pale brown seeds in each.—Open ground in the province of Imerina, *Dr. Parker!* Gathered previously by *Lyall* 184! 187! Allied to *H. ternatus*, Masters (*Lagunæa ternata*, Cav.).

Hibiscus (*Lagunæa*) ochroleucus, sp. n.—An annual, diffusely branched from the crown of the root, with slender terete slightly pilose stems about a foot long. Stipules small, obliquely cuneate, foliaceous, persistent. Leaves long-petioled, suborbicular, shallowly cordate, 1–2 in. long and broad, deeply palmately 3- or 5-lobed, the segments crenate or pinnatifid. Flowers solitary in the axils of the lower leaves on short peduncles, and 2–3 aggregated at the end of the branches. Epicalyx none. Calyx finally $\frac{1}{4}$ in. long, shortly pilose, the lanceolate-deltoid teeth twice as long as the campanulate tube. Petals obovate, yellowish, veined, $\frac{1}{4}$ in. long. Fruit-carpels hispid, cuspidate, a little longer than the calyx, with numerous brown, glabrous, triquetrous seeds in each.—Open ground in the province of Imerina, *Dr. Parker!* A near ally of the last species.

HIBISCUS STENOPHYLLUS, sp. n.—A (perennial?) herb 2 feet high, with slender terete shortly pilose long branches. Stipules minute, deciduous. Leaves deltoid in general outline, 2–3 in. long and broad, deeply palmately 5-lobed, the two lower divisions small, the three others long, lanceolate, acuminate, irregularly dentate, green and pilose on both surfaces. Flowers solitary in the axils of the leaves; peduncles 1–1½ in. long. Epicalyx none. Calyx pilose, ½ in. long; segments lanceolate, twice as long as the campanulate tube. Petals white, twice as long as the calyx. Stamens mostly low down on the column, which is twice as long as the calyx. Fruit small, ovoid, pilose, 5-celled. Seeds few in a cell, hairy.—Low ground in the Betsileo country, flowering in February, *Baron* 266!

Dombeya platanifolia, Bojer in Ann. Sc. Nat. ser. 2, xviii. 190.—Forests of the province of Imerina, *Dr. Parker!* Native name, *Halampona.*

DOMBEYA MODESTA, sp. n.—A shrub, with slender dark brown terete branchlets, clothed only near the tip with stellate pubescence. Petiole ½–1 in. long; blade oblong, entire, deltoid at the tip, rounded at the base, 1½–2 in. long, minutely dentate, moderately firm in texture, green and glabrous above, paler and with thin stellate pubescence beneath. Flowers numerous, in lax cymes from near the tip of the branches; pedicels curved, slender, densely pubescent, 1–4 times as long as the calyx; bracts linear, very minute. Calyx ⅛–⅙ in. long; tube very short; segments lanceolate-deltoid. Petals obovate-cuneate, half as long again as the calyx, red, marcescent, persistent. Staminodes ligulate, half as long as the petals, reaching to the summit of the style.—Betsileo land in the open country, flowering in April and May, *Baron* 324! Allied to *D. elliptica*, Bojer. About fifteen species of this genus are now known in Madagascar.

GREWIA GRANDIFLORA, sp. n.—A small tree or tall shrub, with slender terete brown glabrous lenticellate branchlets. Petiole ¼ in. long; blade oblong-lanceolate, 2–3 in. long, ½–¾ in. broad, acute, rather rounded at the base, closely denticulate, moderately firm in texture, green and glabrous on the upper surface, paler with a little stellate pubescence beneath. Flowers 2–3 together at the tip of the branchlets on very short pilose pedicels. Sepals coriaceous, lanceolate, reflexing, ¾–⅞ in. long, scabrous on the back. Petals white, oblong-unguiculate, more than half as long as the sepals. Stamens about ½ in. long. Ovary densely pilose, with a long style and large capitate stigma. Fruit not seen.—Woods of Western Betsileo, flowering in December and January, *Baron* 108! Near *G. stenophylla*, Bojer in Proc. Verb. Soc. Nat. Hist. Maur. 1842–1846, 27.

GREWIA TRINERVATA, sp. n.—A tree with slender branchlets, clothed with short dull brown pubescence. Petiole pilose, under ¼ in. long; blade obovate, obtuse, 1–1½ in. long, cuneate at the base, the two prominent side veins running from the base of the midrib to a short distance of the summit of the leaf; texture firm; upper surface bright green and calvate; lower paler, with thin brown stellate pubescence. Flowers 4–8 together in copious peduncled lateral cymes; pedicels as long as the calyx or a little longer. Sepals lanceolate, $\frac{1}{4}$ in. long, grey and scabrous on the outside. Petals lanceolate, half as long as the sepals. Stamens as long as the petals. Style $\frac{1}{8}$ in. long. Fruit not seen.--Woods of Eastern Imerina, *Parker!* Baron 356! Flowers in October. Allied to the Cape and Tropical African *G. occidentalis*, L.

Grewia calvata, sp. n.— A tall shrub, with slender terete nearly glabrous branchlets. Petiole $\frac{1}{4}$–$\frac{1}{2}$ in. long; blade ovate, acute, rounded at the base, irregularly crenate, $1\frac{1}{2}$–3 in. long, green and finally nearly glabrous on both surfaces, thin but firm in texture. Flowers about 3 together in peduncled umbellate lateral cymes; pedicels finally $\frac{1}{2}$ in. long. Sepals lanceolate, $\frac{1}{4}$ in. long, scabrous on the back, with copious black glands mixed with the stellate pubescence. Petals oblanceolate, more than half as long as the sepals, yellowish. Stamens as long as the petals. Fruit a small depresso-globose drupe, with 3–4 angles and as many pyrenes, with one seed in each.—Low ground in Western Betsileo, flowering in December, *Baron* 68! Native name, *Zorotaty*.

Erythryoxylum myrtoides, Bojer in Ann. Sc. Nat. ser. 2, xviii. 185.—Forests of Imerina, *Parker* 119! *Baron* 353! Native names, *Hazomainty* (black wood) and *Hazomby* (iron wood), and used in building.—Forests of the Tanala country, *Baron* 314! Native name, *Hazombiby*.

Evodia madagascariensis, sp. n.—A shrub, about 6 feet high, with angled branchlets. Leaves opposite, simple; petiole about $\frac{1}{2}$ in. long; blade oblong-lanceolate, entire, rigidly coriaceous, 3–4 in. long, 1–$1\frac{1}{4}$ in. broad, acute, cuneate at the base, dark green and glabrous above, pale brown, with copious glands, and slender erecto-patent main veins anastomosing within the margin. Flowers in dense axillary peduncled panicles, about as long as the leaves; pedicels very short. Sepals 4, minute, ovate. Petals 4, oblong white, gland-dotted, $\frac{1}{12}$ in. long. Stamens 4, half as long as the petals; anther as long as the flattened filaments. Pistil as long as the petals; ovary ovoid, pilose, 4-celled; style short, cylindrical; stigma 4-lobed. Fruit not seen.—Hillside 3 miles from Alarobia on the road to Ankafina, *Baron* 17. Flowers in November. Gathered previously by Bojer in the Chasak Mountains.

Linum (*Linastrum*) **betsiliense**, sp. n.—A shrub, about 3 feet high, with long thick woody glabrous densely leafy branches. Leaves alternate, sessile, ascending, lanceolate, acute, about $\frac{1}{2}$ in. long, furnished with a pair of stipulary glands, firm in texture, glabrous, 3-nerved. Flowers in dense terminal cymes; bracts large, linear, persistent; pedicels short. Sepals lanceolate, or ovate-lanceolate, acuminate, serrulate, $\frac{1}{8}$–$\frac{1}{6}$ in. long. Petals obovate, pale yellow, 3-nerved, twice as long as the sepals, free to the base. Stamens 5; filaments filiform, dilated at the base, alternating with small linear staminodia; anthers linear-oblong, Ovary globose, 5-celled, with 2 ovules in a cell; styles 5, filiform. $\frac{1}{8}$ in. long. Capsule as long as the calyx. Seeds shining, pale brown, nearly flat, 1-12th in. long.—Hill in Western Betsileo, flowering in January, *Baron* 98! Allied to *L. africanum*, Linn.: Bot. Mag. t. 403, a widely-spread Cape species.

ASTEROPEIA DENSIFLORA, sp. n.—A shrub 4–5 feet high, with thick rough pale glabrous branchlets. Leaves subsessile, alternate, exstipulate, oblanceolate, entire, obtuse, rigidly coriaceous, glabrous, 1–1$\frac{1}{2}$ in. long. Flowers in dense terminal panicles, with cymose branches; pedicels short, covered with minute red glands. Sepals 5, linear-oblong, rather spathulate, thick, rigid, glabrous, rather accrescent, finally $\frac{1}{6}$ in. long. Stamens 10, all perfect, hypogynous; filaments filiform, but monadelphous at the base. Ovary 3-celled; ovules several in each cell; styles 3, short, falcate, connate in the lower half. Fruit a subglobose capsule the size of a large pea, with only one seed developed in each of the cells. On a bleak mountain-top in Betsileo land, flowering in December and January, *Baron* 40! Closely allied to *A. multiflora*, Thouars, Hist. t. 15.

IMPATIENS BARONI, sp. n.—A much-branched succulent erect glabrous annual herb, with dark red stems 12–18 in. long. Leaves alternate, shortly petioled, lanceolate, 2–3 in. long, glanduloso-denticulate, with pellucid red veins. Flowers 2–3 together in the axils of the leaves on pedicels $\frac{1}{2}$–$\frac{3}{4}$ in. long. Sepals 3, the two upper obtuse, $\frac{1}{6}$ in. long, the lower with an incurved cylindrical spur $\frac{3}{4}$ in. long. Corolla magenta-coloured, $\frac{1}{2}$ in. long; standard $\frac{1}{4}$ in, long, broader than long; wings deeply lobed, the upper lobe oblique oblong, the lower orbicular. Capsules oblique oblong, tubercled, about $\frac{1}{2}$ in. long, narrowed to the base and apex. Seeds about a dozen, ovoid, flattish, densely pilose, about 1-12th in. long. —In wet places on hillsides in the Betsileo country, flowering in December, *Baron* 31! Allied to the Seychelles species (*I. Gordoni*, Horne), but not nearly so showy in the flowers.

OCHNA POLYCARPA, sp. n.—A small tree, with thick glabrous rugose pale brown branchlets. Leaves crowded, obscurely petioled, elliptical, obtuse, cuneate at the base, $\frac{1}{2}$–$\frac{3}{4}$ in. long, lucent, finely inciso-crenate, with close anastomosing veins visible on both surfaces. Flowers few together in terminal cymes, which are hidden by the leaves; pedicels $\frac{1}{4}$–$\frac{1}{2}$ in. long. Sepals 5, broad oblong, much imbricated, persistent, coriaceous, glabrous, $\frac{1}{3}$ in. long. Petals yellow, oblanceolate, a little longer than the sepals. Stamens about 20, much shorter than the sepals. Styles about 10, filiform, 1-12th in. long, joined only low down.—Central Madagascar, probably in the Tanala country, *Baron* 217!

GYMNOSPORIA DIVARICATA, sp. n.—A shrub, 7–8 feet high, glabrous in all its parts, with slender terete, purplish brown branchlets. Spines slender, woody, pungent, erecto-patent, $\frac{1}{2}$–$\frac{3}{4}$ in. long. Leaves alternate or fascicled at the nodes, shortly petioled, oblong, 2–3 in. long, obtuse, cuneate at the base, minutely inciso-crenate, moderately firm in texture, green on both surfaces. Flowers in copious lateral cymes 1–1$\frac{1}{2}$ in. broad. on spreading very slender peduncles $\frac{3}{4}$–$1\frac{1}{4}$ in. long; main branches very divaricate; bracts very minute, lanceolate; pedicels at most as long as the flowers. Sepals orbicular, purplish brown, glabrous, under $\frac{1}{2}$ lin. long. Petals obovate, white, $\frac{1}{2}$ lin. long. Stamens 5, alternate with the petals. Ovary 3-celled; style simple. Fruit not seen.—West Betsileo, flowering in December and January, *Baron* 143! Very like the Mauritian *G. trigyna*, Baker, in habit, leaves and inflorescence, but spinose, with smaller flowers.

Gymnosporia brachystachya, sp. n.—A tree, glabrous in all its parts, with subterete grey slender branchlets. Leaves shortly petioled, oblong, 1–$1\frac{1}{2}$ in. long, obtuse, deltoid at the base, rigidly coriaceous, with regular parallel rather ascending main veins. Cymes 3–4-flowered, fascicled, about $\frac{1}{2}$ in. long; pedicels longer than the flowers. Calyx patellæform, $\frac{3}{4}$ lin. diam.; sepals minute, semiorbicular. Petals spreading, whitish, suborbicular, about $\frac{1}{12}$ in. long. Stamens 5, shorter than the petals; anthers linear-oblong. Fruit not seen.—Central Madagascar, in the province of Imerina, *Dr. Parker!* Native name, *Toho*. There are three undescribed species of this genus in the Kew Herbarium, and four others are described by Tulasne—one under Gymnosporia, and three under Catha.

Gouania pennigera, Tulasne.—Central Madagascar (the definite locality not given), *Baron* 252! Gathered previously by Bojer.

Vitis (*Cissus*) **microdonta**, sp. n.—A climber, glabrous in all its parts, with stout fleshy terete stems and stout spirally-twisted tendrils. Petiole 3–4 in. long; blade simple, suborbicular, cordate, with an open basal sinus, 5–6 in. long and broad, deltoid at the apex, minutely distantly dentate, moderately firm in texture, green on both surfaces. Flowers in leaf-opposed peduncled cymes; pedicels $\frac{1}{4}$ in. long. Calyx patellæform, 1 lin. diam., obscurely 4-lobed. Petals 4, yellowish, $\frac{1}{8}$ in. long, expanding before they fall. Ovary 2-celled; cells 2-ovuled. Fruit unknown.—Western Betsileo-land, flowering in January, *Baron* 59! Allied to *V. pallida* of Wight and Arnott, a widely-spread Indian and Tropical African species. Mr. Baron's No. 58, also from West Betsileo, of which he has not seen the flowers, will likely prove to be an allied undescribed species.

Vitis (*Cissus*) **oxyodonta**, sp. n.—A shrub, glabrous in all its parts, with slender terete brown woody branchlets. Tendrils none on the specimens. Petiole 1–$1\frac{1}{2}$ in. long; blade ovate, slightly cordate, cuspidate, 2–3 in. long, green and glabrous on both surfaces, moderately firm in texture, with close very cuspidate ascending teeth. Flowers 20–30 together in axillary cymes on peduncles 1–$1\frac{1}{2}$ in. long; pedicels $\frac{1}{8}$–$\frac{1}{6}$ in. Calyx $\frac{1}{2}$ lin. diam., patellæform, glabrous, nearly entire. Petals 4, $\frac{1}{2}$ lin. long, falling in a cap. Style longer than the depresso-globose 2-celled ovary. Fruit not seen.—Central Madagascar (the precise locality not stated), *Baron* 155! Allied to *V. arguta*, Hook. fil., of the Niger country.

Vitis (*Cissus*) **floribunda**, sp. n.—A shrub, glabrous in all its parts, with terete woody branchlets. Tendrils none. Petiole $\frac{1}{3}$–$\frac{1}{2}$ in. long; blade oblong, 2–3 in. long, cuspidate, rounded at the base, moderately firm in texture, green on both surfaces, strongly distantly dentate; teeth deltoid-cuspidate. Flowers about 20 together in copious lax lateral cymes shorter than the leaves; flower-pedicels $\frac{1}{8}$-$\frac{1}{6}$′in. Calyx patellæform, $\frac{3}{4}$ lin. diam., obscurely 4-lobed. Petals 4, greenish, $\frac{1}{2}$ lin. long, falling without expanding. Fruit black, obovoid, $\frac{1}{6}$ in. diam. in the dried state.—Hedge round a village in South Betsileo, in company with *Clitoria heterophylla*, Baron 268! Allied to *V. cornifolia*, Baker, of Nile-land and Upper Guinea.

VITIS (*Cissus*) BITERNATA, sp. n.—A small shrub, nearly glabrous in all its parts, with scandent very slender branchlets and copious slender spiral tendrils. Petiole about 1 in. long; fully-developed leaves biternately compound; leaflets ovate-oblong, cuspidate, conspicuously dentate, an inch or less long, thin in texture, green and nearly glabrous on both surfaces. Flowers in small dense peduncled leaf-opposed cymes; pedicels very short. Calyx patellæform, $\frac{1}{2}$ lin. diam. Petals 4, greenish, $\frac{1}{2}$ lin. long, falling without expanding. Bud globose. Fruit not seen.—Woods of Western Betsileo land, flowering in December and January, *Baron* 118! Allied to *V. microdiptera*, Baker, which Mr. Baron has also gathered, climbing over trees especially amongst rocks in ravines in the Betsileo country, where its native name is *Famakyentana*. He describes its fruit as being not the size of a large pea, 1-celled and 1-seeded.

CUPANIA ISOMERA, sp. n.—A shrub or small tree, glabrous in all its parts, with rather stout terete grey branchlets. Leaves equally pinnate; petiole about an inch long; leaflets usually 3-jugate, opposite, oblong, obtuse, entire, 2–3 in. long, cuneate at the base, moderately firm in texture, green on both surfaces; rachis of the leaf flattened and winged upwards. Flowers polygamous, arranged in sparse shortly-peduncled panicles terminal on the branchlets; pedicels about as long as the flowers. Sepals 5, imbricated, oblong, pilose, under $\frac{1}{12}$ in. long, persisting and reflexing. Petals 5, minute, white, spathulate, with 2 scales at the base. Disk prominent, 1 lin. diam. Stamens 5, exserted or included, both anther and filament pilose. Fruit turbinate, glabrous, $\frac{3}{4}$ in. long, with two valves which open down to its base. Seed solitary, enveloped in a scarlet arillus nearly up to the top.—Woods of Western Betsileo, flowering in December, *Baron* 104! Allied to *C. lævis*, DC., of Mauritius and Bourbon, from which it differs by its 5 stamens and 2-valved fruit.

(To be continued).

NOTES ON THE BOTANY OF SWANAGE, DORSET.

By Henry T. Mennell, F.L.S.

The Botany of the county of Dorset has been so admirably described in Mr. Mansel-Pleydell's 'Flora,' that a casual visitor can hope to add but little to it that is new; but during a short stay at Swanage last August, I collected the following unrecorded species, or subspecies:—

Rosa bibracteata, Bast. Nitson, near Swanage.

Daucus gummifer, Lam. Sea cliffs, Tilly Whim, near Swanage. Admirably characteristic specimens. The shining bright green leaves, with their broad blunt segments, strikingly distinguish this plant from the maritime forms of *D. Carota* which grow along with it.

Valerianella Auricula, DC. This is the prevailing species of the genus in the cornfields lying along the base of the chalk downs, north of Swanage.

Salicornia procumbens, Sm. Shore of Poole Harbour, nearest to Little Sea.

The following localities for some of the rarer species may be added, most of them not hitherto noted in the Swanage or (G) division of the Dorset Flora.

Leonurus cardiaca, L. Studland.

Borago officinalis, L. Corfe Castle, and banks of stream, Chapman's Pool.

Myosotis palustris, L., *β. strigulosa*.—Corfe Castle.

Potamogeton pectinatus, L. Little Sea.

P. pectinatus, var. *scoparius*. Little Sea.

P. pusillus, L. Little Sea.

Ruppia rostellata, L. Poole Harbour, near to Little Sea, growing with *Zostera nana*.

Blysmus compressus, Panz. Bogs, Studland Heath.

I had also the satisfaction of finding in their recorded habitats the following very rare plants:—

Cyperus longus, L. Ulwell, Swanage, growing in great profusion and most vigorously over two large marshy fields.

Scirpus parvulus, R. & S.—Little Sea, Studland. Mr. More's description of this plant, as found by him near Arklow, Ireland (Journ. Bot. 1868, pp. 254, 321), agrees admirably with its appearance and habits in Dorsetshire. Little Sea is a large shallow pool, a mile in length, peaty in its upper portion, and sandy towards the sea, with which it has till recently communicated; now a ditch and dry dyke keep back the tide, and the water is not perceptibly brackish. On the sea side of the dyke the principal plants are:—*Salicornia procumbens*, *Suæda maritima*, *Spergularia marina*, *Schœnus nigricans*, and a rigid dense-headed form of *Juncus maritimus*, with polished dark brown sheaths, approaching *J. acutus*. On the land side of the dyke are found *Polypogon monspeliensis*, *Spergularia neglecta ?*, *Agróstis stolonifera*, and *Samolus Valerandi*. Here, too, on the sandy, often inundated, shores of the pool, the *Scirpus parvulus* abounds. It clothes the oozy surface of the sand with its yellowish green herbage over a considerable area. Its hold upon the sand is so slight that, after a stormy day of wind and rain, the shore for a distance of fifty yards was piled up with wrack consisting of this plant alone, just as seaweed is thrown up along the beach. A little farther inland the wrack consisted of *Potamogeton pusillus*, Charas, and *Myriophylla*. The *Scirpus* was flowering very freely, and in some cases, though rarely, the fruit was fairly matured; it is smooth, trigonous, with a very long, slender, slightly scabrid style. The little beaked bulbous enlargements of the root fibres (Journ. Bot. 1868, p. 321) which characterise this plant abounded; from them are evidently developed the plants of the ensuing season. There are also frequently found at the base of the tufts, and surrounded by the stems, comparatively large hard dark purplish bulbillæ, composed of transparent membranous sheaths, enclosing a small black granular nucleus. The plant must in all its localities be so frequently submerged that it is probably rarely propagated by seed.

Polypogon monspeliensis, Desf. This beautiful grass is abundant along the shore of Little Sea. I hoped when I found it that I had made an interesting addition to the local flora, but I find Mr. Mansel-Pleydell has recorded its discovery in this locality subsequently to the publication of his 'Flora' (Journ. Bot. 1875, p. 275).

Mentha sylvestris, L. This plant is recorded as probably extinct in the county. I certainly gathered it some three or four years ago on the banks of the stream just above Yeovil Junction Station. Perhaps some botanist waiting there as I was for his train will confirm the locality.

A POINT IN BOTANICAL NOMENCLATURE.

By James Britten, F.L.S.

From time to time prominence has been given in this Journal to questions connected with botanical nomenclature, in the discussion of which much interest has been manifested. The subject is one of such importance to working botanists that I do not think it necessary to apologise for drawing attention to a point in which, as it seems to me, the practice existing and gaining ground among English botanists is opposed to one of the 'Lois de la Nomenclature Botanique' formulated by M. DeCandolle. It may, of course, be desirable that the law should be set aside—on that I am now expressing no opinion; but if it is to be regarded as existing and binding, it should not be recklessly broken, or passed by as unworthy of notice.

The law to which I refer is that which deals with the authority for the name of a species. It runs thus:—

"Art. 50.—Les noms publiés d'après un document inédit, tel qu'un herbier, une collection non distribuée, etc., sont précisés par l'addition du nom de l'auteur qui publie, malgré l'indication contraire qu'il a pu donner. De même les noms usités dans les jardins sont précisés par la mention du premier auteur qui les publie."

There can be no doubt that the first impression which this law conveys is that the original describer or definer of a species is treated somewhat unfairly if his connection with the plant is practically passed over, in favour of some one who happens to publish the name, or it may be the description, which he has found in MS. This is because, as has been said by M. DeCandolle and other writers, the mention of the authority after a name is not an homage paid to the author, but simply a reference from which we may ascertain by whom it was published.* Professor Asa Gray, commenting upon this law, urged that, if a name existing only in MS. or in a herbarium were published, it must take as its authority the botanist who proposed, not the one who published it. Thus, he says, as DeCandolle published the genus *Leptocaulis* from a letter of Nuttall, we should write *Leptocaulis*, Nutt. in DC., not *Leptocaulis*, DC. In reply to this, M. DeCandolle† pointed out that, if "Nutt." be placed after the name, there results this inconvenience—that we may search through all the published works of Nuttall, even down to his smallest magazine contributions, without finding any trace of *Leptocaulis*; whereas, if we write *Leptocaulis*, DC., the name is readily found in the works of DeCandolle. Moreover, Nuttall never published the name, and possibly would not have done so upon further investigation.

My purpose in writing this note is to ask whether there are other reasons which explain the ignoring of the 50th law by English botanists. That it is to a large extent ignored, the following citations of names published during 1881 will clearly show:—

NAME AS PUBLISHED.	NAME ACCORDING TO ART. 50.
Cinchona Ledgeriana, Moens MSS., ex Trimen in Journ. Bot., 1881, p. 323.	*Cinchona Ledgeriana*, Trimen.
Dendrobium Treacherianum, Reich. f. MSS., ex Hook. f. in Bot. Mag., t. 6591.	*Dendrobium Treacherianum*, Hook. f.
Diplorhynchus, Welw. MS., ex Ficalho & Hiern in Trans. Linn. Soc., 2nd s., ii. 22.‡	*Diplorhynchus*, Ficalho & Hiern.
Noronbia Broomeana, Horne MSS., ex. Oliv. in Ic. Plant., t. 1365.	*Noronhia Broomeana*, Oliv.
Polygala Krumanina, Burchell MS., ex Ficalho & Hiern in Trans. Linn. Soc. 2nd s., ii. 16.	*Polygala Krumanina*, Ficalho & Hiern.
Poranthera alpina, Cheesm. MSS., ex Hook. f. in Ic. Plant., t. 1366.	*Poranthera alpina*, Hook. f.
Reimaria oligostachya, Munro MSS., ex Benth. in Journ. Linn. Soc., xix. 34.	*Reimaria oligostachya*, Benth.
Veronica Cheesemani, Benth. MSS., ex Hook. f. in Ic. Plant., t. 1366.	*Veronica Cheesemani*, Hook. f.

Many other examples might be adduced; but these are sufficient for my purpose. Some of them are especially misleading—*Polygala Krumanina*, for example, the date of which is 1881, while Burchell, its reputed author, died in 1863. That the practice laid down by the laws has some inconveniences cannot be denied. If carried out, the numerous species which have the name of Robert Brown attached to them, on the authority of 'Hortus Kewensis,' will have to take that of Aiton in its place; while the numerous species described by Dr. Welwitsch in MS., and published in the 'Flora of Tropical Africa' and elsewhere, must bear the name of the author of the special memoir in which they occur. If the law can be set aside, well and good; my contention is that we ought not to have two practices which contradict each other in existence at one and the same time.

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* See Journ. Bot., 1877, pp. 189 and 282; also Journ. Bot., 1881, p. 76.

† Bull. Soc. Bot. France, xvi. 77.

‡ With regard to this genus, a further complication arises. One species, *D. mossambicensis*, Benth. (Ic. Plant. t. 1355), was published in October last; but the genus is not there defined, nor are its essential characters indicated, and the genus itself was not published in a regular manner until December.

For it must not be supposed that the neglect of the law is universal in England. For example, in this Journal for 1881 (pp. 353, 354), the Messrs. Groves have adhered to it in attributing to Bruzel and Kuetzing two species of Chara (*C. baltica* and *C. contraria*) which most authors, Kuetzing himself included, have assigned to Fries and A. Braun respectively; and I ought to add that it was their action in so doing which first directed my attention to the discrepancy between written law and actual practice.

The fact that, as already announced in these pages, a new edition of Steudel's 'Nomenclator " is in preparation, renders the present a peculiarly fitting time for bringing forward matters of this kind. Mr. B. D. Jackson has already shown* his fitness to deal with questions relating to botanical nomenclature, and it is certain that his plan of citation will be carefully considered, and as carefully executed. If, therefore, this note should elicit from him or from other competent botanists an expression of opinion upon the point to which I have directed attention, my object will have been attained.

Extracts and Notices of Books and Memoirs.

THE LIFE-HISTORY OF *HEMILEIA VASTATRIX* IN COFFEE.

[The following is Mr. Ward's summary of the main points of importance in connection with his investigations into the Ceylon Coffee-leaf Disease (see p. 22). From Dr. Trimen's letter, which accompanies the Report, we learn that "Mr. Ward looks upon the present Report as final in its character, and does not anticipate that any discovery of practical value would result from further work at *Hemileia*. The only point of any importance remaining unsolved is the history of the second kind of spore."]

"1.—*Hemileia vastatrix* is a parasitic fungus, the spores of which are capable of rapid germination on the moist surface of a coffee-leaf. The short tubes thus produced enter the breathing pores of the leaf, and in less than a week, in favourable circumstances, begin to form a mycelium which at the end of another week or so have done sufficient damage to the leaf to produce yellow spots. During the third week the spores are usually produced, each to act as before, if sown, &c.

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* Journ. Bot., 1881, pp. 75—82.

2.—A leaf of the coffee attacked at numerous points by such germinating spores rapidly succumbs to the ravages of the mycelium, and falls long before it would normally have done so; not only by directly robbing the tree of food prepared by the labours of the leaf, but, further, by occupying space and shortening the period of usefulness of the leaf, is the tree injured.

3.—The loss of matter and functional disturbance brought about by these continued and periodical ravages have for effect a diminished power to mature crop on the part of the coffee; and flower-buds, flowers, and berries fall because the nutritive relations between the shoots, leaves, and flowers have become overthrown. More crop is borne, as a rule however, where the trees contain more food material to support it.

4.—The spores of *Hemileia* are carried by wind. Whether a spore travels a long distance in one journey, or whether it is swept along in successive leaps, it may be carried from one estate or district to another. The shaking of the trees also disseminates spores, and they are driven from fallen leaves to the trees. These spores, scattered on the foliage, become washed down to the lower surface and germinate as before, provided the atmosphere, &c., be sufficiently moist.

5.—No special predisposition on the part of the coffee is required for its infection, and no other conditions are necessary to the spore than moisture and the presence of air, &c., as with any germinating seed.

6.—The spores are in such countless numbers, germinate so rapidly, and some of them so easily escape the action of even the most efficacious remedies, that no good and lasting results can be obtained from external applications unless the sources of reinfection be removed. No attempts to combat the disease by passing ingredients into the tree have shown any trace of success: the mycelium cannot be attacked after it has entered the leaf.

7.—Diseased leaves should be collected and destroyed, and every means possible employed to prevent the ingress of winds. Cultivation should be directed to these ends, and the pruning and manuring, as far as possible, arranged so that large masses of young foliage are as seldom as possible exposed as a surface of food material for the spores at those times when they are most blown about, as at the bursts of the monsoons. In cases where the disease is threatening to denude the trees of leaves at the critical period when crop is ripening up, there can be little question of the use of lime, unless weightier considerations, based on the results of experience with that particular soil, forbid it.

8.—Manure can in no sense be properly looked upon as a cure for the disease. In so far as it enables a tree to clothe itself with dense foliage, the tree may be able to afford the sacrifice of a number of its leaves to the fungus; but the well-fed mycelium will in such cases produce more spores in proportion, and these may be the more readily distributed, and germinate on other leaves, and so the stock of fungus be actually increased. Nevertheless, careful manuring is necessary for the production of crop without damage to the tree.

9.—The burning of fallen leaves, &c., is almost universally condemned by planters as too dangerous. In cases where this cannot be done, it is better to bury the leaves and prunings than to leave them tossing about. In doing this, the layers of leaves and prunings (which may be mixed with weeds) should be carefully covered with caustic lime and earth, and not disturbed for several months. The suggestion that the leaves might be placed under pigs and cattle affords a less safe alternative; but even this plan is much better than leaving them to be blown about the estates. The sooner the leaves are gathered after falling, the more spores are destroyed with them.

10.—The origin of leaf-disease cannot be traced with certainty; but the evidence is so strong in favour of its having arisen from an invasion of spores out of the jungle, that this view may be considered highly probable. Once on the coffee, its spread would be very rapid, where such large unbroken areas extend. No trace of valid evidence exists for the views that the disease has been 'induced by artificial manuring,' or 'caused by alterations in the sap of the tree;' it is, beyond all doubt, the results of the action of a fungus derived from without, the spores of which were either imported into Ceylon (an improbable event) or came from the native jungles."

REPORT OF THE HERBARIUM OF THE ROYAL GARDENS, KEW, FOR 1880.*

By Sir J. D. Hooker, K.C.S.I., &c.

[The principal additions to the Kew Herbarium during 1880—the moss-herbarium of Schimper, the herbarium of General Munro, and that of Dr. Goodenough—have already been recorded in this Journal (Journ. Bot., 1881, pp. 183, 96, 256).]

The following is a list of the names of the other principal contributors to the herbarium during 1880:—

Europe.—Cooke, Dr. M. C.; British and other Fungi (177). Desmazières; 'Plantes Cryptogamiques de France' (2800, purchased). Flahault, Dr. Chas.; Norwegian and Lapland (77). Heldreich, Dr.; Greek (114, purchased). Henriquez, Dr. J. A. (Coimbra); Portuguese plants, principally fungi (269). Husnot, T.; French mosses (25). Huter, Rupert; Spanish (467, purchased). Kiær, F.; European mosses (100). Larbalestier, C.; Lichens (200, purchased). Lindeberg, Dr. C. J.; Scandinavian Hieracia (150). Markham, Commander; Arctic, collected by Mr. Grant in Franz Josef Land. Massalongo, Dr. C., Ferrara; Hepaticæ (30, purchased). Mougeot and Nestler; Crypt. Vogeso-Rhen. (the last volume) (purchased). Schimper, Dr. A. F. W.; mosses, various (1550, purchased, exclusive of the herbarium

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[* Dated January 1st, 1881, but not published until December of that year.—Ed. Journ. Bot.]

presented by the Baroness Burdett-Coutts). Societé dauphinoise; French, &c. (401, purchased). Thuemen, Baron von; 'Mycotheca universalis' (300, purchased). Trevelyan, Sir Charles, K.C.B.; various collections made by the late Sir Walter Trevelyan (329). Vize, Rev. J. E.; British fungi (100, purchased). Winslow, Dr.; Swedish. Donations of European plants have also been received from A. Bennett, A. W. Bennett, Mrs. F. Croker, Miss G. Davies, C. Lacaita, J. C. Mansell-Pleydell, W. Mitten, Alfred Newton, C. B. Plowright, Rev. T. A. Preston, Mr. Roper, Dr. C. Sanio, and F. Townsend.

Asia.—Aitchison, Surgeon-Major; Afghan. Balfour, Prof. I. B.; Arabian from Aden (47). Beddome, Col.; S. Indian (96). Blunt, Lady Anne; collection made in her remarkable journey into Central Arabia. Brandis, Dr.; N. Central and Western India (135). Bretschneider, Dr.; N. Chinese (8). Brotherus, V. F.; Caucasian mosses (238, purchased). Collett, Col.; Afghan (80). Edgeworth, M. P.; N., Central, and Western India (93). Ellis, R.; Western Himalaya (507). Hunter, Capt. F.; Arabian, collected north of Aden (273). King, Dr. G.; Indian (51). Murray, Jas. A.; Algæ from Kurrachee (26). Pierce, Edwin; Beloochistan (161). Pierre, L.; Cochin Chinese and Cambodian plants, the first received from those countries; a most important contribution (418). St. Petersburg, Imperial Botanic Gardens; 2475 species from their botanical collectors in Caucasus (640 species), Siberia (225), Turkestan (760), Persia (92). Sampson, T.; Canton (127). Scully, J.; Nepal (256). Veitch, Messrs.; Chinese and Japanese, collected by their traveller, Mr. Maries; a very extensive and valuable contribution (1626). Watt, Dr. G.; selections from his large herbarium, made in various parts of India, with valuable attached notes. Woodrow, G. M.; Bombay. There have also been received a few specimens of Afghan plants from Dr. Cattell and Surgeon-Major Johnstone; of Chinese from Dr. Bushell, C. Ford (of Hong Kong), and Dr. Harris; of Japanese from Mons. A. Franchet and Dr. Thurber; of Sumatran from Dr. Beccari; and Malayan from Mr. Low, of Perak.

Africa.—Berlin, African Society of; Angolan (37, purchased). Clarke, C. B.; African *Commelinaceæ* (22). Drummond Hay, Miss; N. Moroccan collection made during Sir J. D. Hay's Embassy from Tangiers to Fez (220). Henderson, A.; Guinea (18). Hutton, Henry; Cape (70). Kiæer, F.; mosses of Africa and Madagascar (30). Kirk, Dr. J., H.M. Consul-General, Zanzibar; India-rubber yielding plants of East Tropical Africa. Kitching, Langley; Cape (202). Lisbon, Escola Polytechnica; Angola (407). Nelson, W.; Cape (549). Paris, Jardin de Plantes; Algerian (7). Rogers, Rev. W. Moyle; South Africa (260). Rohlf and Ascherson; Lybian Desert (122). Schweinfurth, Dr. G.; Egyptian (145). Soyaux, H.; Gaboon (69). Thomson, J.; a most interesting collection from the Highlands of the lake district of Africa, made during his expedition with the late Mr. Keith Johnstone. Wakefield, The Rev. T.; valuable collection from

East Tropical Africa (146). Wilson, The Rev. T. C.; good collection from the Victoria Nyanza River. Wood, J. M., Natal (505).

MADAGASCAR AND MAURITIUS.—Baron, R.; Madagascar (300). Bescherelle, Em.; Mascarene mosses (165), Hildebrandt, Dr.; Madagascar (561, purchased). Kitching, Langley; Madagascar (202). Parker, G. W.; Madagascar (400).

NORTH AMERICA.—Berlin, Royal Herbarium of; species of *Cuphea* (26). Brace, L. J. K.; Bahamas (165). Curtiss, A. H.; Florida (219, purchased). Davenport, G. E.; American ferns (16). Greene, E. L.; American and Arizona (100). Haydon, Walter; Hudson's Bay (79). Hemsley, W. B.; American (9). Gray, Prof. Asa; various American (192, including 9 collected in Mexico by Schäffner). Wright, W. G.; Californian (12). Specimens have also been received from Messrs. Eaton (Florida), Mellichamp, Mohr (two species of *Pinus*); Parry, Drs. (American) and Watson, Sereno.

WEST INDIES AND GUIANA.—Fendler, A.; Trinidad ferns (54, purchased). Garber, Dr. A. P.; Porto Rico (142). Jenman, G. S., Botanical Gardens, Demerara; a fine collection of 798 species, and another of palms. Paris, Jardin de Plantes; French Guiana (51). Thurn, E. im.; Guiana (506), and excellent specimens of palms. Various West Indian specimens have been received from Gen. Sir J. H. Lefroy, D. Morris (Jamaica), Dr. Nicholls (Dominica), and H. Prestoe (Trinidad).

SOUTH AMERICA (excluding Guiana).—Ernst, Prof.; Venezuela. Hieronymus, G.; Argentine Republic Collections (179, purchased). Lorentz, D. P.; Uraguayan (53, purchased) Markham, Commander; Galapaga Islands (29). Petersburg, Imperial Botanical Gardens of; Brazilian (530). Veitch, Messrs., New Grenada; collections of their traveller, Mr. Kalbreyer (454). Miscellaneous S. American specimens have been received from W. A. Forbes (Brazil), Dr. Lindberg (Chili), Prof. Nation (Peru), Dr. Spruce, and Dr. H. G. Reichenbach.

AUSTRALIA.—Bennett, J. J., executors of the late: the completion of Brown's Australian collection made during Flinder's voyage in 1804. Mueller, Baron von; various Australian. Paris, Jardin de Plantes; plants of Capt. Baudin's voyage to Australia (647).

NEW ZEALAND.—Cheeseman, T. F. (30). Kirk, T. (64). Travers, W. T. L.; a large collection.

POLYNESIAN ISLANDS.—Eaton, Prof.; Sandwich Islands. Hildebrand, Dr.; Sandwich Islands. Luerssen, Dr.; various Polynesian (340). Powell, The Rev. T.; Samoan (75).

ANTARCTIC ISLANDS.—East, Capt., H.M.S. Comus; Crozet Islands. Geheeb, A.; Kerguelen's Land mosses (10).

INDIA OFFICE COLLECTION OF BOTANICAL DRAWINGS.—As the sequel to the transference to Kew of the economico-botanical collections from the India Museum, the collection of drawings of Indian plants in the India Office library, 3359 in number, have been deposited under the direction of the Secretary of State for India in Council in the library of the herbarium of the Royal Gardens. This very extensive collection will be intercalated with the general collection of *Icones plantarum* at Kew, which is certainly the largest in existence, and which it will enormously enrich and extend. The following is the India Office list of the separate collections of which the whole is the aggregate:—Royle, Carey, and others, 1791; Roxburgh, 171; Wight, 150; Craufurd and Prince, 23; Finlayson, ·71; Colebrooke, 47; Buchanan, 87; Hamilton, 123; Horsfield, 59; Marsden, 48; Parry, 125; Mysore plants, 19; Prince of Wales Island, 160; Madras School of Art, 4; Court, 89; Chinese, 392, Total, 3359.

Islands Flora. By Chr. Groenlund. Copenhagen, 1881.

Following up his 'Revised List of Iceland Plants' (Bot. Tidskrift, 1874–75, pp. 36–85, Dr. Groenlund has recently issued a 'Flora of Iceland.' So far as one can judge, he does not seem to have made use of Rottböll's paper (1766–67), noticed by Dr. Trimen in this Journal for 1870 (pp. 277–279). Thus he does not notice *Stellaria humifusa*, Rottb., which, as Dr. Trimen remarks, "was founded on Icelandic specimens, and is fully described by Rottböll." The 'Revised List' contained 342 species of flowering plants and ferns; the present 'Flora' has 357 species, an addition of fifteen species (given as sixteen by Groenlund). Some of these were accepted by Babington, but doubted in the 'Revised List,' and are now numbered as new. The following are the main points in which this present 'Flora' differs from the 'Revised List,' and Prof. Babington's paper in the Journal of the Linnean Society (xi. pp. 280–348):—*Sinapis arvensis*, L. (not numbered by Babington), is accepted in 'Revised List,' and retained in the 'Flora.' *Erysimum hieracifolium*, L., doubted in 'Revised List,' now accepted, as by Babington. *Alsine verna*, var. *propinqua* (*Arenaria propinqua*, Richardson), is added. *Cerastium arcticum*, Lange, Fl. Dan. 2693, is given; and *C. latifolium*, L., is expunged. *Fragaria collina*, Ehrh., is retained (*cf.* Bab.) *Saxifraga decipiens*, Ehrh., is given instead of *S. cæspitosa*, L., of 'Revised List,' but as a synonym. If the plant cultivated at Kew as *decipiens* is the true plant, it can hardly be the same as the Scottish (Ben Avon) specimens, considered true *cæspitosa* by Dr. Boswell and Mr. J. G. Baker. *Bellis perennis*, L., is not in the 'Flora'; Babington accepts it, and it is given from Iceland by Nyman. *Matricaria inodora*, L., var. *phæocephala*, Rupr., is the name now given to the var. *borealis*, Hartm., of the 'Revised List.' *M. maritima*, L. (of Babington), is not given. *Carduus arvensis*, L. (not admitted in the 'Revised List'), is in the 'Flora.' Of *Hieracium alpinum*, L., a var. *leucotricha*, Lange MS., is given. *Gentiana serrata*, Gunn, is substituted for *G. detonsa*, Rottb. *Lamium purpureum*, L., accepted by Babington, but doubted in the 'Revised List,' is now numbered in the 'Flora.' *Primula* "(*stricta*, Horn?)" doubted in the 'Revised List,' is accepted in the 'Flora,' with the reservation shown. *Armeria sibirica*, Turcz., of 'Revised List' is reduced to a variety of *maritima*. *Plantago media*, L., doubted by Babington, is given on the authority of Steenstrup. *Atriplex Babingtonii*, Woods, var. *virescens*, Lange, Fl. Dan. 2713, is given. Of *Callitriche verna*, Kütz. (?), a var. *cæspitosa*, Schultz, is given. *Betula odorata*, Bechst., var. *Friesii*, Regel, of the 'Revised List,' becomes var. *tortuosa*, Regel. *Salix arbuscula*, L., accepted in 'Revised List,' is expunged. *S. sarmentacea*, Fr., which is only mentioned in 'Revised List,' is here numbered with the other species. *Juniperus nana*, Willd., is named *J. alpina*, Clus. *Platanthera Koenigii*, Lind., of the 'Revised List' is here expunged. *Juncus arcticus*, Willd., doubted by Babington, and in the 'Revised List,' is now given as of Prof. Lange's determination. *Tofieldia borealis*, Wahl., is given; Babington says it is the plant of Hudson, and his name is much older. *Triglochin maritimum*, L., doubted in the 'Revised List,' is numbered. *Potamogeton* "*lanceolatus*, Sm.," of Babington's list is a form of *rufescens* (I. Carroll in Herb. Brit. Mus. !) much resembling *P. nigrescens*, Fries. *P. marinus*, L. (*filiformis*, Nolte), is given, but *P. pectinatus* is omitted; both are accepted by Babington. *Carex festiva*, Dewey (Lapland and Finmark), *C. turfosa*, Fries (Sweden), *C. salina*, Wahl. (Sweden, Norway, Lapland, and Finland), *C. aquatilis*, Wahl., *forma minor*, and *C. glauca*, Sm., are new to Iceland. *C. salina* is not given by Fries as Swedish, but I have a specimen gathered in that country. *Alopecurus fulvus*, Sm., new to Iceland. *Agrostis canina*, L., is accepted by Babington, doubted in 'Revised List,' and now numbered in the 'Flora.' *Glyceria distans*, Wahl., is new from Iceland, as Groenlund considered the plant given as such by Babington to be his *G. conferta*, Fries: this latter is now correctly named *G. Borreri*, Bab. *Festuca duriuscula*, L., doubted in the 'Revised List,' is numbered in the 'Flora.' *F. arenaria*, Osb., is reduced to a variety of *F. rubra*.

Lists only are given of the Mosses, Hepaticæ, Lichens, Characeæ (1), Algæ, Fungi. The following summary (p. 154) gives the results of Groenlund's work :—

Flowering Plants ...	332	New for Iceland ...	16
Ferns and Allies ...	25	,, ...	0
Mosses	213	,, ...	61
Hepaticæ	62	,, ...	9
Lichens	182	,, ...	99
Algæ and Characeæ...	40	,, ...	14
Fungi	24	,, ...	23
	878		222

Taking the three lists—Babington's, the 'Revised List,' and 'Flora' of Groenlund—as representing Icelandic Botany, it is still evident that much remains to be done to clear up many questions of plant-names, the doubtful species forming a very large percentage of the whole number.

A. B.

We draw attention to Part i. of the 'Flora of the Bristol Coalfield,' edited by Mr J. W. White, which is appearing in the Proceedings of the Bristol Naturalists' Society, because—by the sensible action of the Society—separate copies can be obtained of the Hon. Secretary, 47, Hampton Park, Redland, Bristol, at the small cost of a shilling. Mr. Bucknall's paper on British Fungi, with three plates and descriptions of two new species—*Agaricus electicus* and *Peziza fugiens*—may be had for the same sum. In this way such papers are rendered accessible to many besides the members of the local Society, and we commend this example to our Northampton friends, whose Journal is practically confined to members. We note that *Thlaspi alpestre*, first published as a Somerset plant in our volume for 1881 (p. 174), is here recorded from two other localities in that county—near Sidcot, and on Mendip, not far from Cheddar.

We have received from Messrs. Cassell the second series of 'Familiar Wild Flowers,' of which Mr. Hulme is the illustrator, while Mr. Shirley Hibberd supplies the letterpress. Our criticisms upon the first series (Journ. Bot., 1881, p. 58) apply in the main to the present volume. The letterpress is extremely poor, and in some cases has little connection with the figures; and we can assure Mr. Hibberd that scientists are by no means insensible to beauty, as he seems to imply when he speaks of some plants as not being "ugly enough to please the botanists." Some of Mr. Hulme's figures are pretty, so far as they go, but many are very scrappy, and some—e. g., *Lathyrus latifolius*—scarcely recognisable.

Articles in Journals.

Botanical Gazette (Jan.)—E. J. Hill, '*Eleocharis dispar*,' n. sp. —G. Engelmann, 'Notes on Western Conifers' (*Pinus reflexa*, n. sp.) —Id., 'Additions to North American Flora' (*Stellaria obtusa*, *Campanula planiflora*, *Eriogonum alpinum*, *Juncus canaliculatus*). — J. G. Lemmon, '*Woodsia Plummeræ*,' n. sp.

Botanische Zeitung (Dec.).—A. Meyer, 'On the Structure of Starch-granules' (1 tab.).—(Jan. 6).—L. Just, '*Phyllosyphon Arisari*' (1 tab.)

Hedwigia (Dec.).—P. A. Karstan, 'Fungi novi.'—C. A. J. A. Oudemans, '*Agaricus Staringii*,' n. sp.

Magyar Növenytani Lapok (Dec.).—J. Pantocsek, 'New Bosnian plants' (*Symphyandra Hofmanni*, *Corydalis Stummeri*, *Salvia Sonklari*). —J. Jákó, 'On the evolution of the stomates of *Stapelia variegata* and *S. trifida*.'—A. Kanitz, 'Plantæ Romaniæ hucusque cognitæ (concluded).

Midland Naturalist (Jan.).—J. E. Bagnall, 'Flora of Warwickshire' (continued).

Œsterr. Bot. Zeitschrift (Jan.).—J. Freyn, Memoir of H. M. Willkomm (with portrait).—H. Braun, '*Rosa Hirciana*, n. sp.' (Croatia).—F. A. Hazslinszky, '*Peltidium* and *Geoglossum*.'—W. O. Focke, 'Hybrid Plants' (*Epilobium*, *Anagallis*, *Digitalis*).—P. Sintenis, 'Cyprus and its Flora' (continued).—P. G. Strobl, 'Flora of Etna' (continued).

Botanical News.

Another of the few remaining links which connect the present generation of English botanists with the past has been removed by the death of the Rev. Gerard Edwards Smith, at the age of seventy-seven. Mr. Smith, who was a Church of England clergyman of the 'Evangelical' school, is best known by his work, published in 1829 during his residence at Sandgate, entitled 'A Catalogue of the rare or remarkable phænogamous plants of South Kent.' Although arranged upon the Linnean system, this little volume was an advance upon previous works of the kind: it contains critical notes upon the species of *Orobanche*, *Medicago*, and *Ophrys* (upon which he had previously published remarks in the 'Magazine of Natural History' for 1828 (i., 398)), and the first recognition as British of *Statice occidentalis*, Lloyd, then identified with *S. cordata*, L., and subsequently described and figured by Mr. Smith (in Engl. Bot. Suppl., t. 2663), as *S. binervosa*. This species, with others, is figured in the careful plates (five in number), from Mr. Smith's own drawings, which accompany the 'Catalogue.' In 1837 he added *Scirpus parvulus* to the list of British plants; a specimen from him in the British Museum (Natural History) Herbarium is labelled—"Collected in July, 1837, at Lymington, Hants, in the newly excavated swimming-bath, with *Scirpus Savii*." In 1846 he sent to the Botanical Society of London specimens of a plant, with the provisional name (which has since been generally accepted) of *Filago apiculata*, accompanied by a description, which is published in the 'Phytologist' (iii. 575, o. s.). But Mr. Smith's contributions to botanical literature were very few, the only paper attributed to him in the Royal Society's Catalogue being a note on the claims (of which he was a supporter) of *Alyssum calycinum* to a place in the British flora (Phyt. ii. 282–4, o. s.). At this time (1844–1846) he was vicar of Cantley, Yorkshire, where the above-named *Filago* was first detected. In 1861 he wrote a preface to a little illustrated volume 'On the Ferns of Derbyshire,' and his help is acknowledged by the Rev. W. H. Painter, in his 'Notes on the Flora of Derbyshire,' published last year in this Journal. He died at Hillside, Ockbrook, Derbyshire, on the 21st of December last. Many of his specimens are in the British Herbarium of the Natural History Museum, South Kensington.

Mr. Richard Kippist, long known in connection with the Linnean Society, died at Chelsea on the 14th of January. Born in 1811, his early life was spent in Stoke Newington, though his parents came originally from Bedford. When quite a lad he was clerk in the office of Mr. Joseph Woods. His taste for Botany either originated or was acquired when under that gentleman, with whom he travelled, and whom he afterwards assisted in the publication of 'The Tourist's Flora.' Mr. Woods leaving London for Lewes, Mr. Kippist, in February, 1830, entered the service of the Linnean Society, then located in Soho Square.

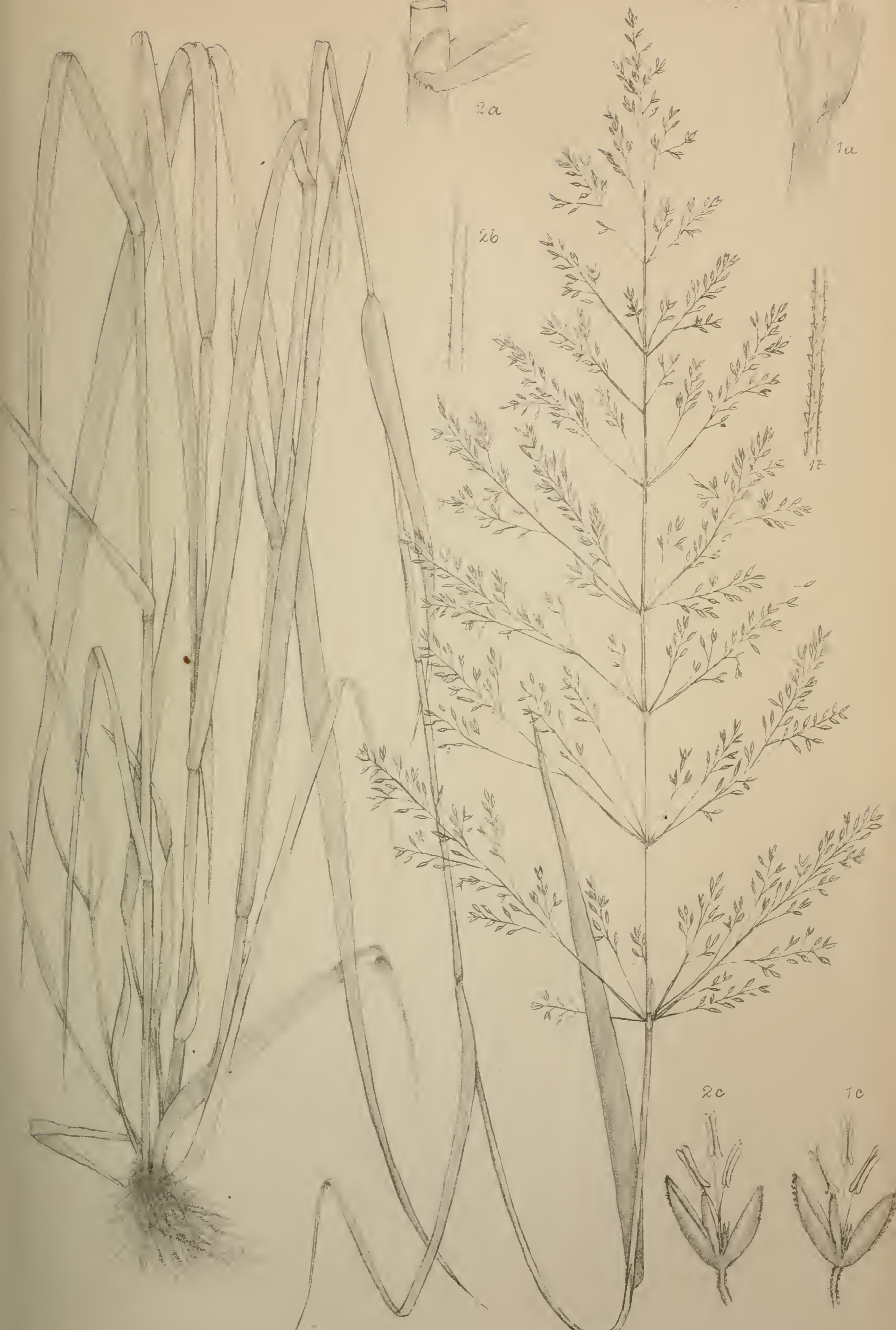
In 1842 he succeeded David Don as librarian to the Society, of which he was shortly afterwards elected an Associate. Mr. Kippist contributed various botanical papers to the Linnean Society, which were published in their 'Proceedings' and 'Transactions.' He was an original member of the Royal Microscopical Society, and an Associate of the Royal Botanical Society, Regent's Park, and at the latter he served for many years as judge at the flower shows. Spare in habit and of medium stature, in his younger years he was very active, but latterly Mr. Kippist suffered from asthma and chronic bronchitis, which materially deprived him of his earlier active habits. He retired from office in 1880, after fifty years of service, his full pension having been awarded to him by the Council of the Society. A Composite plant was defined by Baron F. von Mueller under the name *Kippistia*, in his honour; but this has since been more generally considered as a species of *Minuria*. Baron von Mueller had provided for this contingency by also naming the plant *Minuria Kippistiana* (Pl. Vict. t. 35); and it it is to be regretted that this name is ignored in the 'Flora Australiensis' (iii. 499), where the plant is called '*M. suædifolia*, F. Muell., under *Kippistia*.'

The last work of the late Mr. H. C. Watson on the distribution of British plants was his 'Topographical Botany,' issued in 1873–4, in which he traced the dispersion of each species through the 112 "vice-counties" which he adopted. Of this book only one hundred copies were printed for private circulation, and these were all given away by the author immediately to his friends and correspondents. Since its issue a large amount of new material has been accumulated, and at the time of his death, last autumn, Mr. Watson was engaged in the preparation of a new edition. This he did not live to complete, as regards its prefatory and explanatory portions; but he had kept an interleaved copy, in which he regularly entered up every record of the occurrence of any plant in a new district that was brought to his notice. At his own special request, this was deposited with his herbarium at Kew, and from this Mr. J. G. Baker and the Rev. W. W. Newbould are now preparing a second edition of the book, which Mr. Quaritch has undertaken to publish.

We have received a circular stating that the Botany of North Devon is about to be systematically investigated by a committee appointed by the Barnstaple Literary and Scientific Institution, upon which we are glad to see the name of Mr. W. P. Hiern, of Castle House, Barnstaple. The district includes "that part of the country which is drained by rivers and streams that ultimately empty their waters into the sea on the north coast," thus corresponding with Mr. Watson's North Devon subdivision. Communications may be addressed to Mr. Thomas Wainwright, Hon. Sec. of the Barnstaple Institution, or to Mr. Hiern.

The Rev. T. A. Preston, of the Green, Marlborough, has in preparation a new (3rd) edition of the 'Flora of Marlborough,' with such additions as may render it, as far as possible, a Flora of Wiltshire; he will be glad to receive any help.

Tab. 327


2a
1a
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2c
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Robert Morgan del. et lith.

West, Newman & Co. imp.

Agrostis nigra, *With.*

Original Articles.

ON *AGROSTIS NIGRA*, WITH.

By JAMES E. BAGNALL.

(TAB. 227.)

FOR some years past I have noticed an *Agrostis* growing on the borders of corn and other cultivated fields (more especially in marly and calcareous soils), which appeared to me to differ widely from both *A. vulgaris* and *A. alba;* so much so as to be at once recognisable by any one accustomed to field observations, without the trouble of gathering for closer inspection.

More critical examination gives strongly-marked structural differences, which I will endeavour to point out. From *A. vulgaris* it differs in having larger flowers, with the glumes relatively longer than the palea; in having the lower glume more strongly serrulate half its whole length, those of *A. vulgaris* being only faintly serrulate one-third the whole length; in the panicle branches being more strongly toothed, more rigid, and more erect—those of *A. vulgaris* being somewhat flexuous and divaricate; in the leaf-sheath being slightly rough, this roughness, however, varying much according to the nature of the soil in which the plant grows—in *A. vulgaris* the sheaths are quite smooth; in the ligule being prominent, oblong blunt and often jagged—in *vulgaris* the ligule is very short and truncate; and in its usually taller growth and more robust habit.

From *A. alba* it differs in the glumes not being serrulate from the base upwards, in the panicle branches being bare of flowers for a considerable distance from the main stem, and in the panicle being open both in flower and fruit.

When growing in light sandy soils *A. nigra* sends out numerous underground shoots (soboles), often of considerable length and much branched; these give origin to the new plants. In light soils the plant often occurs in large roundish patches; in marly or clayey soils the soboles are shorter, and the plant has then a thinner and more scattered growth.

Specimens have been submitted to Professor Babington, who, with his usual courtesy and kindness, examined them, and, in an admirable letter on the plant, says—"Your *Agrostis* seems to differ from our plants in several particulars, and is probably the *A. nigra* of Withering. His quotation of Leers is a mistake, judging from both the figures and description in 'Fl. Herborn.' The peculiar points of your plant seem to be (1) the always spreading panicle; (2) the nearly undivided branches in the lower part; (3) the long truncate ligule. The roughness of the sheaths seems very slight, and the lower glume has teeth only in its upper half. In most books only two are recognised: *A. vulgaris* and *A. alba*, or by some synonymous names, distinguished by the ligule and open or contracted fruit panicle; we may possibly place *A. nigra* (With.) between them."

Withering described *A. nigra* as a distinct species in his 'Systematic Arrangement of British Plants,' ed. 3, 1796. The following is his description, in ed. 5, ii. 173, condensed:—

"*A. nigra.*—Panicle scattered; branches bare at the base, florets few; calyx inner valve smooth; root creeping. . . . . Straws numerous, upright, slender, weak, a foot high; the lower joints sending off branches which creep on the ground. Leaves slender, flat, weak, smooth, generally shrivelled. Leaf-scale short blunt (Leers)."

That part of Withering's description copied from Leers evidently belongs to a different plant.

Sinclair's *Agrostis repens* ('Hort. Gram. Woburnensis,' ed. 2, 344) is possibly the same plant as Withering's *A. nigra;* he quotes the latter as a synonym, but gives no plate. The latter part of his description, "root strongly creeping," appears, however, to point to a soboliferous plant, whilst Withering's plant was, if the description is correct, a stoloniferous plant. It is possible that both botanists may have had the same plant in view, as the soboles of *A. nigra* send up leafy shoots, which are sometimes long and prostrate. Sinclair's plate of *A. alba* would do well for our plant.

Knapp's *Agrostis seminuda* is probably the *Agrostis nigra* of Withering; this is fully described in 'Gramina Britannica' (ed. 2), 1841, p. 114; in most respects this description would well represent the Warwickshire plant.

Agrostis nigra is abundant in many parts of Warwickshire, in cultivated fields, on railway banks and sidings, and in old clay quarries. I have very rarely seen it as a roadside or hedge-bank plant. Its most frequent habitat is the borders of cornfields in heavy soils, but it is by no means restricted to these. I have noticed it also in similar situations in Worcester, Stafford, and Shropshire, and have no doubt its distribution will be found to be general throughout the country.

I cannot conclude this notice of *A. nigra* without acknowledging how greatly I am indebted to the Rev. W. W. Newbould, for his kindness in referring to the various works of foreign botanists, and also in comparing my specimens with those in the Herbaria of the British Museum, the Linnean Society, and other public collections, and for many critical remarks and valuable suggestions.

Description of Plate 227.—Fig. 1. *Agrostis nigra*, With. (nat. size), from Warwickshire specimens: 1 *a*, lodicule; 1 *b*, portion of panicle-branch; 1 *c*, flower (all enlarged); 2 *a*, 2 *b*, 2 *c*, corresponding portions of *A. vulgaris*, L.

CONTRIBUTIONS TO THE FLORA OF CENTRAL MADAGASCAR.

By J. G. Baker, F.R.S.

(Continued from p. 51.)

Baronia, gen. nov. *Anacardiacearum.*

Flowers regular, hermaphrodite. Calyx of 5 minute ovate deciduous sepals. Petals 5, oblong, obtuse, imbricated, three times as long as the calyx, deciduous. Disk large, patellæform, entire. Stamens 5, alternate with the petals, very small, inserted outside the disk; filaments flattened; anthers subglobose. Ovary superior, oblique, subglobose, 1-celled, glabrous; styles 3, minute, falcate, united at the base, with capitate stigmas. Fruit an oblique transversely oblong 1-seeded drupe; endocarp thin, brown, separated by septa from the black crustaceous epicarp. Seed filling up the fruit, with a thin membranous testa and thick fleshy cotyledons. Allied to *Buchanania* and *Loxostylis.*

Baronia Taratana, n. sp.—A tree 30 feet high, with thick terete branches, the branchlets clothed upwards with short brown pubescence. Leaves simple, crowded, alternate; petiole 1–3 in. long; blade linear-oblong, 6–7 in. long, under 2 in. broad, obtuse, entire, deltoid at the base, subcoriaceous in texture, glabrous when mature, penninerved, nearly white beneath, with a little brown pubescence in an early stage. Flowers in lax ample terminal and lateral peduncled panicles 4–6 in. long, with corymbose branches; rachises densely clothed with brown pubescence; pedicels as long as the flowers; bract minute, deltoid, pilose. Petals 1-12th in. long. Fruit glabrous, $\frac{1}{3}$ in. long.—In the forest at Ankafina, Betsileo-land, flowering in November and December, *Baron* 22! Native name, *Taratana.*

Crotalaria cytisoides, Hilsenb. & Bojer.—Pod sessile, oblong, $\frac{3}{4}$ in. long, $\frac{1}{4}$ in. broad, densely clothed with spreading dirty white persistent pubescence.—Central Madagascar, *Dr. Parker!*

Crotalaria xanthoclada, Bojer; Benth. in Hook. Lond. Journ. ii. 588.—Pod distinctly stalked, subcylindrical, glabrous, $\frac{1}{2}$–$\frac{5}{8}$ in. long, $\frac{1}{6}$ in. broad, 7–8-seeded.—Imerina, *Dr. Parker!* Native name, *Laingokalana.*

Indigofera pedunculata, Hilsenb. & Bojer MSS.—A shrub, with slender virgate angled branchlets, thinly coated with adpressed white hairs. Leaves 2–4 in. long; petiole short; stipules setaceous; leaflets 13–21, opposite, petiolulate, lanceolate, $\frac{1}{4}$–$\frac{1}{2}$ in. long, firm in texture, coated with short adpressed white bristly hairs. Flowers in lax axillary long-peduncled racemes 2–3 in. long; pedicels finally $\frac{1}{4}$–$\frac{1}{3}$ in. long; bracts minute, deciduous. Calyx 1–12th in. long, with an oblique campanulate tube and deltoid or lanceolate teeth. Corolla red-purple, $\frac{1}{3}$ in. long, pilose. Pod cylindrical, glabrescent, 1–1$\frac{1}{4}$ in. long, 1–12th in. broad, many-seeded.—Central Madagascar, *Dr. Parker!* Gathered before by Hilsenberg & Bojer, and by Dr. Lyall. Group of *Tinctoriæ*, in which it is marked by its long peduncles, lax racemes, and narrow leaflets. Upwards of a dozen species of *Indigofera* are now known in Madagascar, about half of which are endemic.

Indigofera stenosepala, n. sp.—A shrub, with slender terete branchlets, densely clothed with short brown glandular hairs. Leaves 1–1½ in. long; petiole very short; stipules setaceous; leaflets 11–15, opposite, oblong-lanceolate, cuspidate, petiolulate, ¼–⅓ in. long, moderately firm in texture, green and obscurely pilose above, nearly white beneath, with a thin coat of adpressed bristly hairs. Flowers in dense axillary racemes, with peduncles shorter than the leaves; pedicels very short, clothed, like the peduncles, with brown pubescence; bracts minute, deciduous. Calyx 1–12th in. long, densely brown-pubescent; teeth linear-setaceous, 3–4 times as long as the campanulate tube. Corolla yellowish, half as long again as the calyx, densely pilose. Ovary linear, silky, multiovulate. Pod not seen.—Central Madagascar, *Dr. Parker!* Well marked in the group of many-leafleted *Tinctoriæ* by its very long narrow calyx-segments.

Tephrosia Lyallii, n. sp.—A perennial herb, with slender terete branchlets, densely clothed with short spreading hairs. Leaves simple, subsessile, lanceolate, 1½–2 in. long, ⅛–⅓ in. broad, firm in texture, bright green on both surfaces, thinly brown-pilose beneath, especially on the very ascending raised veins; stipules minute. Flowers in lax long-peduncled terminal racemes; pedicels as long as the calyx; bracts minute, linear. Calyx ⅛ in. long, densely brown silky; teeth about as long as the campanulate tube, the upper deltoid, the lower lanceolate. Corolla red-purple, ⅓ in. long, pilose; standard erect, orbicular. Pod linear, sessile, densely pilose many-seeded; style flattened, ⅛ in. long.—Central Madagascar, in grassy places, *Dr. Parker!* Gathered previously by Dr. Lyall. We have specimens of three other Tephrosias from Madagascar; the cosmopolitan *T. purpurea*, Pers., of which *T. crassa*, Bojer MS., is a maritime variety; *Dalbergia Barclayi*, Hook. Exot. Flora, t. 188, a near neighbour of the Indian and Mauritian *T. Hookeriana*, H. & A.; and *T. seminuda*, Bojer MS., an endemic species near *T. pulchella*, Hook. fil., with 5–7-jugate narrow leaflets white-silky beneath, very lax racemes, small flowers, linear-setaceous calyx-teeth twice as long as the tube, a red corolla ⅓ in. long, and a brown-silky recurved linear 10–12-seeded pod; and Vatke has just published a fourth species (*T. Rutenbergiana*) in 'Reliquiæ Rutenbergianæ.'

Mundulea pauciflora, n. sp.—A shrub, with woody angled nearly glabrous branchlets. Leaves 1½–2 in. long, nearly sessile; stipules minute, deltoid, deciduous; leaflets 10–15-jugate, opposite, petiolulate, oblanceolate, obtuse, with a distinct cusp, patent, ¾–1 in. long, moderately firm in texture, strongly veined, obscurely silky, green on both surfaces. Flowers few, proceeding direct from near the top of the woody branchlets, not racemed in the axils of their leaves; bracts rigid, lanceolate-deltoid; pedicels brown-silky, finally ¼–⅓ in. long. Calyx campanulate, brown-silky, ⅛–⅙ in. long; teeth minute, deltoid. Corolla reddish, ¾ in. long, rather silky; standard obovate-cuneate; wings oblanceolate. Stamens ¾ in. long; alternate filaments flattened towards the tip. Pod linear, brown-sericeous, 3–4 in. long, ¼ in. broad, 10–12-seeded.—Central Madagascar, *Baron* 47! The species already known all have their flowers in dense axillary racemes. Three species are already known in Madagascar; *Dalbergia striata*, Bojer Hort. Maur. 111, is probably the same as the Indian and African *M. suberosa*, Benth.; *D. Telfairii*, Bojer *loc, cit.*, with about nine obovate-oblong glabrescent strongly-veined leaflets, flowers in dense racemes just like those of *suberosa*, and a flat glabrescent pod ½ ft. long; and a third unnamed species with 7–11 thick silky oblanceolate leaflets with reflexed edges, shorter racemes, and a few-seeded thick smaller villose earlier-dehiscent pod. Dr. Parker states that *M. Telfairii* is used as a fish-poison, under the native name of *Famamo* or *Fanomamo.*

Desmodium barbatum, Benth., var. *emirnense*, Baker.—Differs from the typical form of this common American species, which Dr. Hildebrand has lately gathered in the island of Nossibè, by its leaves being, instead of trifoliolate, reduced to a single oblong or obovate-oblong leaflet 1½–2 in. long. Dr. Parker sends this from Central Madagascar, where it was gathered long ago by Dr. Lyall, and another dwarf variety (var. *nummularifolium*) of the same species, with a single orbicular leaflet ⅓–½ in. diameter. Native name, *Tsilavondrivotra* (not levelled by the wind).

Smithia (*Kotschya*) *chamæcrista*, Benth. in Plant. Junghuhn. 211.—Central Madagascar, in the forest, a shrub 8–10 feet high, *Dr. Parker!* Native name, *Sorindrana.*

Smithia strigosa, Benth. *loc. cit.*—Central Madagascar, on exposed hillsides, *Dr. Parker!*

VIGNA ANGIVENSIS, n. sp.—*Lotus angivensis* and *Tephrosia heterophylla*, Bojer MS.—A trailing herb, with a fusiform perennial root and slender terete stems, densely clothed with fine spreading brown hairs. Petiole ¼–2½ in. long; stipules minute, lanceolate, persistent; leaflets 3, ovate, oblong, or lanceolate, obtuse or acute, ½–1 in. long, entire, thinly pilose. Flowers solitary on long pedicels in the axils of the leaves; bracts and bracteoles small, lanceolate. Calyx thinly pilose, ⅙ in. long; teeth lanceolate, as long as the campanulate tube. Corolla reddish, more than twice as long as the calyx, glabrous; standard orbicular, ½ in. diam. Pod linear, brown, pilose, rather recurved, 1½–2 in. long, 10–15-seeded.—Central Madagascar, *Dr. Parker!* One of the species called *Avokombiby.* The root has a sweet starchy taste, and is dug up and eaten by the boys that herd the cattle.

VIGNA PARKERI, n. sp.—A climbing herb, with very slender finely pilose stems. Petiole about as long as the leaf; stipules lanceolate-sagittate, minute, persistent; leaflets 3, oblong, obscurely pilose, subacute, entire, ¾–1 in. long, moderately firm in texture, green on both surfaces. Flowers two together in long slender pilose peduncles in the axils of the leaves; pedicels very short; bracts minute, linear. Calyx pilose, ⅛ in. long; teeth lanceolate or deltoid, as long as the tube. Corolla reddish, glabrous,

⅓ in. long; standard orbicular, ⅓ in. broad. Ovary linear, many-ovuled. Pod not seen.—Central Madagascar, *Dr. Parker!* Of the Tropical African species, this comes nearest to the Abyssinian *V. membranacea*, A. Rich.

Weinmannia lucens, n. sp.—A large tree, with branchlets ancipitous and obscurely pilose towards the tip, terete and glabrous lower down. Leaves long-stalked, always digitately trifoliolate; petiole 1½–2 in.; leaflets lanceolate, 2–3 in. long, rigidly coriaceous, green, glabrous and lucent on both surfaces, prominently veined, conspicuously crenate. Flowers in nearly sessile axillary spikes about as long as the petiole, with a thick woody glabrous rachis. Calyx campanulate, ½ lin. long; segments orbicular. Petals obovate-oblong, twice as long as the calyx. Stamens much longer than the petals. Ovary densely pilose, with two glabrous persistent styles ⅛ in. long.—Banks of the rivers in Western Betsileo, *Baron* 97! A well-marked new species, nearest *W. Bojeriana*, Tulasne.

Weinmannia Bojeriana, Tulasne.—Forests of Central Madagascar, *Dr. Parker!* Although these specimens have the leaves sometimes imparipinnate, with 5 leaflets, I have little doubt they belong to Tulasne's species, which we possess already from Bojer and Meller, in whose examples the leaves are simple or digitately trifoliolate, as described by Tulasne and Engler. Dr. Meller says it is a tree 20 to 40 feet high, with white flowers. Dr. Parker's specimen shows the fruit, which is an oblong 2-valved tomentose capsule ⅛ in, long, with 2 glabrous persistent styles nearly as long.

(To be continued.)

A CONTRIBUTION TOWARDS A FLORA OF THE TEIGN BASIN, S. DEVON.

By Rev. W. Moyle Rogers, F.L.S.

In two papers on S.E. Devon plants, printed in this Journal in January, 1878, and January, 1880, I gave a brief account of some of the less common plants that I had met with along the S.E. Devon coast, and in the country lying between Haldon Hill and Bovey Tracey. I had then searched more or less thoroughly a belt of country across the lower part of the Teign Valley, but had still left the greater part of the river basin unvisited. Since then, besides exploring this belt more fully, I have been over a good deal of the ground lying between Chudleigh and Chagford. Mr. T. R. Archer Briggs has also kindly furnished me with some valuable notes on plants seen by him (within the last two years) in various parts of the district. His name will be found after such stations as are here given on his authority. I am myself responsible for all the rest. I am also much indebted to Mr. Briggs and to Professor Babington for helping me to name some of the more obscure Rubi of the district. Some fuller notes, which

I have in preparation, on the Roses, I have thought it best to reserve for the present.

As this paper deals only with the rarer plants observed by Mr. Briggs and myself, in a well-defined area within the last five years, I have as a rule given all the stations in which the more interesting species have been seen by either of us. Though my adoption of such a course has involved some little repetition of matter previously communicated—which I much regret—I hope it will be thought excusable as tending towards greater completeness, and for convenience of reference.

"The Bovey" is the local name for the West Teign or Wrey, the chief tributary of the Teign proper. After flowing through the parishes of North Bovey, Moreton-hampstead (written "Moreton" in this paper), Lustleigh, Bovey Tracey, and Chudleigh Knighton, this stream joins the main river at Teigngrace.

Clematis Vitalba, L.—Chudleigh (Fl. Dev.); abundant on "The Rocks" and elsewhere in the neighbourhood, especially towards Haldon; about Newton Abbot. Not improbably overlooked in some places, but certainly very local, and perhaps occurring only on limestone.

Ranunculus peltatus, Fries.—By the Bovey, near Jews' Bridge; near Newton Abbot, by the Teign and in water meadows on both sides of the town.

R. Lenormandi, F. Schultz.—North Bovey, near the Bovey; by the Teign at Dunsford Bridge, and between Sparrow and Crocombe Bridges; hollow between Christow Down and Canonteign Down; marshy place between Ashton and Trusham. In ditches at Trusham I have found it associated with *R. hederaceus*, L.

R. sceleratus, L.—Between Kingsteignton and Newton Abbot; and by the river at Newton Abbot.

R. auricomus, L.—Wood in Hennock, not far from the river, S.E. of Crocombe Bridge; Chudleigh (Fl. Dev.), woods at "The Rocks" and elsewhere near the town.

R. hirsutus, L.—Border of Knighton Heath, *Briggs;* near Newton Abbot, *Briggs.*

R. parviflorus, L.—Very common in Trusham and the contiguous parishes.

Aquilegia vulgaris, L.—Near Dunsford, *Briggs.* Canonteign Down and Nitton Cleave. Near Ilsington (Fl. Dev.), *Briggs.* Hennock; Ashton; Trusham; Chudleigh (Fl. Dev.). In bushy and heathy places; usually in no great quantity, but I think undoubtedly native.

Berberis vulgaris, L.—In a copse at Hennock, near a garden; in a lane in Ashton, not far from an orchard. A denizen, I think, in both places.

Papaver Rhœas, L., b. *strigosum.*—Trusham and Ashton; occasional.

P. dubium, L., a. *Lamottei.*—"Holly Street," Chagford; Chagford and neighbourhood, *Briggs;* near Moreton; Trusham (only a plant or two once).

P. Argemone, L.—Chagford and neighbourhood, *Briggs.* Near

Moreton; Trusham, on an old wall for several years in succession; and (1881) in some quantity in a field of wheat near Kingsteignton. Both this and the preceding species appear to occur only very sparingly in the district.

Chelidonium majus, L.—In or near the villages of North Bovey; Moreton (Keys' Fl.); Ilsington, *Briggs;* Bridford, *Briggs;* Christow; Hennock; Trusham, and Chudleigh. Rather frequent in the lanes between Trusham and Hennock, but rarely here or elsewhere at any considerable distance from houses.

Corydalis claviculata, DC.—Near Fingle Bridge; Canonteign Down, and Nitton Cleave; Hennock; Trusham. Rather frequent, and often in good quantity.

Fumaria confusa, Jord.—Chagford, *Briggs*. All the representatives of the aggregate *F. capreolata*, L., that I have met with in the district appear to belong to this segregate. It is abundant at Trusham, and I have also observed it at Moreton, Bovey Tracey, Christow, and Teigngrace.

Sinapis alba, L.—I have observed this only at Trusham.

S. nigra, L.—Hedges near the villages of Ashton and Trusham, but very local; on Chudleigh Rocks in considerable quantity.

Erysimum cheiranthoides, L.—Two plants in a cultivated field near Chagford, Sept., 1881, *Briggs;* Christow, *Briggs;* Bovey Heathfield, on waste ground near the Potteries; near Kingsteignton, in a potato field. A colonist of rare occurrence in the district.

Cardamine impatiens, L.—Christow; Hennock; Ashton (Rev. H. Roberts, Keys' Fl.); Trusham; roadside banks. These four stations—the only S. Devon ones yet recorded—are all within half a mile of the river (two on each side of it), and could be included within an area of about two miles square. I expect it will yet be found elsewhere up or down the river. The station "Chudleigh," given in Rav. Fl., on Rev. H. Roberts's authority, was a mistake for Ashton. In N. Devon Mr. Maw (in 'Phytologist,' iv. 791, o. s.), has reported it from "side of a stream at Peppercombe, near Bideford;" but Mr. Watson (in Top. Bot.) has queried it for that vice-county.

Arabis hirsuta, Brown.—Ilsington (Fl. Dev.), *Briggs;* on Kingsteignton Church; near Newton Abbot.

Barbarea intermedia, Boreau.—Dry banks and stony places (usually not far from the river) in Christow, Ashton, and Trusham. Very local.

Thlaspi arvense, L.—Doddiscombe Leigh, Ashton, and Trusham; in cultivated fields, locally abundant. A colonist which has greatly increased at Trusham since 1876.

Teesdalia nudicaulis, Brown.—Fernworthy, Dartmoor, *Briggs;* Christow; Nitton Cleave; Trusham; Chudleigh. Common in bare rocky places.

Lepidium sativum, L.—Lane by the mill above Chudleigh Rocks; two or three plants near together in 1880 and 1881. Hardly likely to become established there. Denizen.

L. Smithii, Hook.—Throughout the district, rather common.

The only native species in the county, so far as I can judge. *L. campestre*, Brown, though perhaps as widely distributed, and occasionally rather abundant in cultivated fields, bears the look of a colonist wherever I have seen it.

Senebiera didyma, Pers.—Near Bovey Tracey; Hennock; Chudleigh streets.

Viola palustris, L.—Frequent by the river from Chagford to Trusham; by the Bovey near North Bovey (Fl. Dev.). Also in marshy places at Moreton, Nitton Cleave, and Ashton.

V. odorata, L.—Near Moreton; Bridford, *Briggs;* Chudleigh (Fl. Dev.); Trusham. Rather frequent in the two last-mentioned parishes, and probably far more so elsewhere than this meagre list of stations would indicate. Usually with white flowers.

V. hirta, L.—Near Dunsford, *Briggs;* Nitton Cleave. Rather common in the parishes of Ashton, Trusham, and Chudleigh, and I expect more general in the district than *V. odorata.*

V. canina, Auct.—Haldon, in small quantity, May, 1881. Not yet certainly observed elsewhere.

V. lactea, Sm.—Piddleton Down and Fingle Bridge, *Briggs;* Christow and Canonteign Downs and Nitton Cleave; western slope of Haldon; but most abundant on Bovey Heathfield (Fl. Dev.) and Knighton Heath.

V. Curtisii, Forster.—The late Mr. H. C. Watson confirmed this name for two plants that I sent him in 1880 from a rocky pasture near Manaton, where they *looked* native, growing as they did on a remote hillside with *Sedum anglicum* and similar plants. But I must add I searched the immediate neighbourhood for nearly half an hour without finding a third specimen; and I have not been able to visit the place since. Is this species ever found truly native in such a situation—several hundred feet above the sea, and some twelve miles or so from the coast?

Drosera intermedia, Hayne.—Seen only on Bovey Heathfield (Fl. Dev.) and Knighton Heath.

Polygala vulgaris, L.—The segregate; Ashton; Trusham, in two places; Chudleigh, in two or three places; and at "The Rocks." Not nearly so general as *P. depressa*, Wender., the common milkwort of heath and down. *P. oxyptera*, Reich. (which I understand but imperfectly), I have on record only for one place, near Nitton Cleave.

Dianthus Armeria, L.—Trusham (Fl. Dev.), in several places, common; Kingsteignton (Fl. Dev.); Teigngrace, perhaps the station referred to in Fl. Dev. as "in the road between Ashburton and Newton, near the latter place."

Saponaria officinalis, L.—Hennock; Trusham; Teigngrace. Always, I believe, as a denizen.

Silene anglica, L.—Chagford; North Bovey (Fl. Dev.); Moreton; in large stony enclosures on Christow and Canonteign Downs, in immense quantity; Ashton; Teigngrace (Keys' Fl.); Newton Abbot. A colonist, widely distributed and sometimes abundant, but certainly local.

Mœnchia erecta, Sm.—Trusham, in several places; Haldon (Fl. Dev.), western slope, near the top.

Cerastium tetrandrum, Curt.—Haldon, near the top ("Haldon" through the rest of this paper will mean the western slope of the hill, and, as a rule, not far from the top); Chudleigh Rocks.

Stellaria aquatica, Scop.—Trusham; here and there along the little stream flowing through the village; flowering every year, but in uncertain quantity. By the Bovey at Jews' Bridge; and by the canal about half-way between Teigngrace and Newton Abbot; abundant. Meadow south of Newton Abbot ("near Newton," Mr. Jordan in Phytol. i. 827, o. s.), only one plant seen in 1881. The authors of Fl. Dev. evidently did not thoroughly understand this genus. In Mr. Jones's herbarium (lately presented by his sister to the Albert Memorial Museum at Exeter), the specimen labelled "*S. nemorum*, near Chudleigh Bridge, Hon. and Rev. W. Annesley,"—on the faith of which this species is in Fl. Dev. claimed as a Devon plant,—is the large form of *S. media* which so often grows with the var. *umbrosa*, and differs from it only by its pubescent calyx and pedicels. In the same herbarium there are two sheets of specimens labelled *Cerastium aquaticum;* one from "the Dart banks near Totnes," scrap-like, but apparently rightly named; the other fine well-marked *S. umbrosa*, from "meadows between Exton and Woodbury, Mr. Jervis." Among several other strange mistakes in this collection are the following, which I might better have mentioned above:—"*Ranunculus hirsutus*, Lympston," is *R. sceleratus;* "*Papaver dubium*, Ilsington," is *P. Rhœas*, b. *strigosum;* and (on another sheet) "*P. dubium*, near Mt. Pleasant," is *P. Rhœas*, with hairs on stem partially adpressed, and rather lengthened fruit.

S. media, With., d. *umbrosa*.—Trusham and Chudleigh. Locally common.

Sagina ciliata, Fries.—Christow; Trusham; Chudleigh Rocks; Wolborough Down. Usually very abundant in favourable situations.

S. subulata, Wimm.—Near Dunsford Bridge; Christow and Canonteign Downs; Bovey Heathfield; Heyton Down, *Briggs;* Haldon (Fl. Dev.).

Spergularia rubra, Fenzl.—Manaton; Moreton; Heytor Down, *Briggs;* Trusham, rather common; Chudleigh Rocks; Knighton Heath. I expect very generally distributed, though often in small quantity.

Scleranthus annuus, L. — Near Moreton, locally common; Christow and Canonteign Downs, frequent; field near Hennock Reservoir; Doddiscombe Leigh; Ashton. In Trusham rather common, and always associated with the last-named species, *Sagina ciliata*, and *Mœnchia erecta*.

Hypericum Androsæmum, L.—Nitton Cleave; Ashton; Trusham; Chudleigh (Fl. Dev.), "The Rocks" and elsewhere. Uncommon and usually in small quantity.

H. calycinum, L.—Lane near Tottiford Farm, Hennock. A denizen, well established in this instance.

H. linariifolium, Vahl.—Fingle Bridge, "very sparingly," Sept., 1881, *Briggs* (Rev. G. B. Warren in Rav. Fl.); near Dunsford Bridge (Mr. Parfitt in Rav. Fl.); on rocks close to the bridge, in good quantity in 1878, but soon burnt up in 1880 and 1881; Canonteign Waterfall, near the top, scarce; below the "Eagle Rock" in Nitton Cleave, very abundant and very fine; Trusham, fairly abundant every year since 1877. From its habit of growing chiefly on the bare rock, this plant often gets much burnt; but some of it may generally be found in flower any time between the end of May and the beginning of October.

H. hirsutum, L.—About Chudleigh (Fl. Dev.), in great quantity, and Newton Abbot.

H. montanum, L.—Chudleigh (Fl. Dev.), border of wood between the town and Ugbrook Park.

H. Elodes, L.—Fernworthy and Vale of the Bovey, between N. Bovey and Dartmoor, *Briggs;* Bovey Heathfield; Knighton Heath; Haldon (Fl. Dev.).

Malva moschata, L.—Remarkably common throughout the district; far more so, I believe, than *M. sylvestris*, L., which, though generally distributed, occurs very sparingly, except in the neighbourhood of houses.

M. rotundifolia, L.—Sands at Teignmouth.

Radiola millegrana, Sm.—Close to a bridge over the Bovey, near Yelham, *Briggs;* Bovey Heathfield (Fl. Dev.); Knighton Heath; Haldon (Fl. Dev.).

Linum angustifolium, Huds.—Frequent in the lower part of the river basin, from Christow Down to Wolborough Down.

Geranium pusillum, L.—Doddiscombe Leigh; Ashton; Trusham; Chudleigh Rocks. Rather common; especially luxuriant on Chudleigh Rocks.

G. rotundifolium, L.—In Drewsteignton Village; and near Fingle Bridge, on the road to Drewsteignton, on a high bank, for some distance. Remarkably near to the moor for this species.

G. columbinum, L.—Frequent from Fingle Bridge downwards.

G. lucidum, L.—Very common in the warmer and more sheltered parts, but becoming scarce and starved in the neighbourhood of Moreton.

G. Robertianum, L., b. *modestum*.—Nitton Cleave, two or three large patches between the "Eagle Rock" and the stream at the bottom.

Erodium cicutarium, L'Her.—Near Moreton (Fl. Dev.), in considerable quantity; Christow Down; Ashton; Newton Abbot. Rather sparingly.

Oxalis corniculata, L.—Bovey Tracey, as a garden weed; Ashton, about the village; Trusham, in three of the lanes, and (far from house or garden) on Black Lea Down. A denizen remarkably well established among native plants in two of the Trusham stations, growing and flowering freely for some distance, but without having extended its range since 1877.

Rhamnus Frangula, L.—Frequent from Chagford down the valley to Chudleigh Bridge, and up Haldon; Bovey Heathfield.

Acer campestre, L.—Dunsford, *Briggs;* Bridford, *Briggs;* very common in Christow and in all the parishes farther down the river; Bovey Heathfield; Knighton Heath. Certainly native in this part of the county.

Ulex Gallii, Planch.—Fingle Bridge; Moreton; Ashton; Trusham; Haldon; Bovey Heathfield. Probably quite general.

Genista anglica, L.—Bovey Heathfield (Fl. Dev.)

Medicago denticulata, Willd.—Near Newton Abbot, 1879, "perhaps only casual," *Briggs*.

M. maculata, Sibth.—Trusham, in no great quantity; Chudleigh (Fl. Dev.), very common at "The Rocks;" near Newton Abbot.

Melilotus officinalis, Willd.; Christow. Colonist or casual.

M. alba, Lam.—Between Chudleigh Road Station and Chudleigh Knighton; and in the yard of the new railway-station at Chudleigh Bridge; a good many plants. Casual.

M. arvensis, Wallr.—Fields near Moreton, Ashton, and Chudleigh; a plant or two only in each case. Casual.

M. sulcata, Desf.—Teignmouth Sands, near the harbour, 1879. Alien.

Trifolium subterraneum, L.—Doddiscombe Leigh; Ashton; Trusham. Exceedingly abundant.

T. medium, L.—Ashton; Hennock; Chudleigh (Fl. Dev.); Haldon. Rather common.

T. arvense, L.—Rather frequent at Trusham.

T. striatum, L.—Doddiscombe Leigh; common in Ashton and Trusham; Ogwell Down.

T. scabrum, L.—Chudleigh Rocks.

T. glomeratum, L.—Christow; Doddiscombe Leigh; Ashton; Trusham; Chudleigh Rocks. Remarkably abundant in parishes so far inland.

T. suffocatum, L.—Trusham, in shallow soil on the tops of two rocky mounds nearly a mile apart, in great quantity; about eight miles from the nearest salt or brackish water at Newton Abbot, and ten from the sea at Dawlish or Teignmouth. On the highest points of the Chudleigh Rocks. The stations given for this species in Fl. Dev.—"Teignmouth Den" and "Sands at Torquay"—need confirmation, as the only plants labelled *T. suffocatum* (from Budleigh Salterton) that I can find in the Jones Herbarium are unmistakably *T. subterraneum*.

T. hybridum, L.—From Moreton downwards, frequent. Alien.

T. fragiferum, L.—Between Chudleigh and Haldon, nearly two miles from the town, in considerable quantity.

T. filiforme, L.—Abundant in rocky pastures in Trusham and contiguous parishes.

T. aureum, Poll.—Enclosure at Fernworthy; also near Gidleigh, *Briggs;* stony enclosure on Canonteign Down. Alien.

(To be continued).

A DECADE OF NEW HONG-KONG PLANTS.

By Henry F. Hance, Ph.D., F.L.S., Member of the Imperial Academy Naturæ Curiosorum, &c.

1. **Uvaria** (*Narum*) **calamistrata**, sp. nov.—Scandens, innovationibus fulvo-tomentosis, cortice cinereo rimuloso, ramulis ferrugineo-stellato-pilosis, foliis subcoriaceis oblongo-ellipticis acutis v. acuminatis supra parum lucidis junioribus stellato-tomentellis adultis glabratis penninerviis costa impressa costulis inconspicuis venulis inconspicue reticulatis subtus dense pallide stellato tomentosis costa costulis venularumque rete elevatis, pedunculis extra-axillaribus 3–1 floris, bracteis bracteolisque ovatis deciduis, floribus diametro 9-linealibus, sepalis ovatis obtusis ferrugineo-tomentosis 3 lin. longis, petalis subæqualibus oblongis acutiusculis flavidis utrinque tomentellis 4 lin. longis exterioribus planis interioribus subcarinatis, carpellis circ. 6-spermis ellipsoideis processubus numerosissimis fulvo-tomentosis 3–4 linealibus lamellatis e basi lata attenuatis varie tortis tectis, seminibus compresso-trigonis dorso rotundatis castaneis semipollicaribus.

In silva densa ad Heong-Kong, ins. Hong-Kong, fructiferam primo detexi m. Augusto 1861; elapsis iam viginti annis flores tandem eodem loco carpsit cl. C. Ford, in ingressu m. Maii, 1881. (Herb. propr. n. 7436.)

This is the plant referred to in the 'Supplement to the 'Flora Hongkongensis' as a doubtful species of *Melodorum*. It is satisfactory, after so lengthened a period of fruitless search, to have found the flowers, and determined its true position. It appears exceedingly distinct from any Asiatic species hitherto discovered.

2. **Euonymus gibber**, sp. nov.—Glaberrimus, ramis teretibus purpureis, foliis oblongis basi cuneatis apice rotundatis emarginatis integerrimis margine leviter revolutis coriaceis pallentibus supra lucidulis subtus opacis remotiuscule penninerviis nervis utrinque leviter elevatis 2½–3½ poll. longis 11–16 lin. latis petiolo 4-lineali, cymis axillaribus laxe dichotomis pedunculo communi 2–2½ poll. longo rigido compresso divaricato fultis plusquam 20-floris, pedunculis rigidis compressis divaricatis 8 lin. longis, pedicellis bilinealibus, floribus pentameris 4 lin. diametro, sepalis suborbiculatis 2 exterioribus minoribus omnibus margine minute ciliato-denticulatis, petalis flavidulis breviter unguiculatis obovato-rotundatis calyce triplo longioribus margine *Elæocarporum* more eleganter multifimbriatis, staminum discum lobulatum duplo superantium filamentis recurvis antheris purpurascentibus, stylo subulato staminibus breviore, stigmate inconspicuo, capsula 4 lin. alta breviter turbinata subtrigona valde gibba loculis duobus scilicet sursum oblique productis indeque germano vertice complanato ad latus detruso loculisque tribus reliquis imminutis, semine unico maturato castaneo arillo pallido margine lobulato ad medium usque cincto.

In horto Hongkongensi cultus, illuc, ut videtur, ab insulæ montosis olim delatus, m. Junio floret. (Herb. propr. n. 21780.)

A very curious and remarkably distinct species, of which *E. attenuatus*, Wall., is probably the nearest ally.

3. ORMOSIA SEMICASTRATA, sp. nov.—Arbor 30–40-pedalis, ramulis tenuissime tomentellis, foliis imparipinnatis, foliis 3–5 elliptico-oblongis coriaceis glaberrimis basi rotundatis apice breviter obtuse acuminatis supra nitidiusculis costa impressa venis inconspicuis subtus opacis costa prominula venulis tenuissime reticulatis 3–4 poll. longis 15 lin. latis petiolulis lateralibus 4 lin. longis terminali subpollicari, paniculis in axillis foliorum superiorum folio circiter æquilongis multifloris densis rachi primaria fulvescenti-tomentosa ramis divergentibus cum pedicellis calycibusque ferrugineo-tomentosis, pedicellis brevissimis, calycis campanulati tubo bilineali dentibus triangulatis acutiusculis lineam longis, petalis albis calycem duplo superantibus, staminibus tantum 5 filamentis glaberrimis, ovario styloque tomentosis, ovulis 2, legumine breviter stipitato oblique ovoideo turgido sublucido minute calloso-apiculato 8 lin. longo, seminis unici testa coccinea.

In vallis Wong-nei-chung, ins. Hong-Kong, silvis, sub fine m. Aprilis, 1879, coll. C. Ford. (Herb. propr. n. 21018.)

This is the only species hitherto found in which the stamens are reduced to half the usual number, but I do not consider this a sufficient mark for generic distinction. The fruit is entirely that of the genus, and, except as to size, not unlike that of the Brazilian *O. coccinea*, Jacks.

4. CHRYSOPHYLLUM PENTAGONUM, sp. nov.—Præter innovationes rufo-sericeas glaberrimum, ramis angulatis cortice cinereo-nigricante rimuloso tectis, foliis oblongis basi cuneatis apice abrupte et obtuse rostratis lucidis costa subtus prominula nervis lateralibus approximatis 3–3¼ poll. longis 12–15 lin. latis petiolo 2–3-lineali, floribus . . . . ?, baccis axillaribus geminatis pedicello crasso trilineali fultis calycis laciniis ovato-rotundatis ciliatis exterioribus acutiusculis interioribus obtusis cinctis styloque brevissimo coronatis pentagonis angulis obtusis v. obtuse incrassato-carinatis 2 v. 3 quam reliquos nunc majoribus ac latioribus apice leviter rotundatis 5-locularibus maturis diametro sesquipollicaribus, seminibus 5 ovalibus lenticularibus nitidissimis fulvis hilo laterali elongato albido opaco 8 lin. longis albumine copioso carnoso.

In silva vallis Wong-nei-chung, insulæ Hong-Kong, m. Januario 1881, fructiferum detexit cl. C. Ford. (Herb. propr. n. 21613.)

I have not seen the flowers of this species, but have been able to examine both quite young and perfectly ripe fruit. It is doubtless nearly allied to the continental Indian and Singalese *C. Roxburghii*, G. Don !, but by the singular form of its fruit differs from that and the few other known Asiatic species.

5. SYMPLOCOS (§ *Hopea*, *Lodhra*) FORDII, sp. nov.—Frutescens, ramulis teretibus ferrugineo- v. fulventi-pilosis, foliis sessilibus e basi subcordata ovato-lanceolatis v. lanceolatis oblique caudato-acuminatis margine revoluto calloso-denticulato utrinque opacis ac creberrime elevato-reticulatis costa supra impressa subtus pallide fulventi-tomentosis costa prominula 1¾–2½ poll. longis 6–10 lin.

latis, floribus 5–10 aggregatis pedunculo brevissimo ferrugineo-piloso bracteis ovalibus albidis ciliatis munito suffultis, calycis membranacei albidi glaberrimi lobis ovatis obtusis apice macula purpurea notatis tubum æquantibus, corollæ niveæ segmentis oblongis, baccis ovoideis glabris calycis dentibus coronatis.

In monte Victoria Peak, ins. Hong-Kong, d. 13, Augusti 1881 fructiferam, Novembrique floriferam invenit cl. C. Ford. (Herb. propr. n. 21799.)

A very pretty species, exceedingly rare where found, remarkable for its neat foliage; the nearest ally of which is no doubt the Singalese *S. elegans*, Thw.

6. Tylophora macrantha, sp. nov. — Latissime scandens, caulibus leviter tomentellis, foliis tenuibus glaberrimis ovatis acuminatis basi truncatis v. subcordatis ad petioli insertionem supra minute glandulosis venulis reticulatis non prominulis subtus pallidioribus 4½ poll. longis 3½ poll. latis petiolo 1¾ poll. longo, umbellis circ. 80-floris pedunculo glabro petiolo dimidio breviore v. æquilongo suffultis, pedicellis gracilibus pollicaribus pilosulis, floribus pallide viridulis diametro 9-linealibus, sepalis ovato-lanceolatis linealibus, corollæ lobis conniventibus late oblongis apice obtusis leviter oblique emarginatis 4 lin. longis, coronæ stamineæ basi adnatæ foliolis cucullatis ex apice depresso in acumen breve productis dorso profunde sulcatis gynostemium adæquantibus, stigmate subplano mutico.

In silvula ad pagum Heong-Kong, insulæ Hong-Kong, ineunte Maio, 1881, coll. C. Ford. (Herb. propr. n. 21728.)

A well-marked species, noticeable for the large size of its flowers.

7. Cryptocarya concinna, sp. nov. — Ramulis angulatis tenuissime tomentellis, foliis chartaceis e basi sæpius oblique cuneata elliptico-oblongis breviter obtuse acuminatis penninerviis supra glaberrimis sublucidis vix reticulatis subtus glaucescentibus dense prominulo-reticulatis sub lente minute hirtellis, 2–4 poll. longis 13–16 lin. latis petiolo 3–6 lineali, paniculis axillaribus et terminalibus laxiusculis thyrsoideis tomentellis folio brevioribus v. longioribus, floribus tomentosis.

In silvis vallis Wong-nei-chung, ins. Hong-Kong, d. 23, Aug., 1880, detexit C. Ford. (Herb. propr. n. 21748.)

A very neat species, allied to *C. floribunda*, Nees! *C. obliqua*, Bl.! and *C. glaucescens*, R. Br.!

8. Beilschmiedia (*Eubeilschmiedia*) chinensis, sp. nov.—Frutescens, ramulis foliisque novellis aureo-tomentellis adultis glabris, foliis oppositis v. alternis coriaceis elliptico-oblongis basi cuneatis apice breviter obtuse acuminatis supra glaberrimis vix nitidis subtus glaucescentibus pilisque brevibus oculo tantum armato conspicuis conspersis penninerviis utrinque sed supra magis reticulato-venosis 3-pollicaribus petiolo 5-lineali, paniculis petiolum duplo circiter superantibus basi nudis rachi floribusque aureo-tomentellis, pedicellis brevissimis, perigonii 2-linealis tubo campanulato limbi laciniis subobovatis duplo breviore, filamentis

puberulis, stylo crassiusculo, baccis ovoideo-globosis leviter circ. 15-nervatis glaucescentibus 5 lin. altis 6 lin. latis.

In valle Su-kun-pu, ins. Kong-Kong, sub initio m. Maii, 1881, detexit cl. Ford. (Herb. propr. n. 21705.)

An interesting discovery, the genus not having previously been met with in China.

9. Cinnamomum (*Malabathrum*) validinerve, sp. nov. — Ramis angulatis nigricantibus glabris v. apicem versus tenuissime tomentellis, foliis rigide coriaceis ellipticis supra lucidulis subtus rufulis glaucescentibus basi cuneatis apice in acumen breve obtusum subito productis triplinerviis nervis supra leviter impressis subtus valide prominulis lateralibus versus folii apicem evanescentibus venulis transversis supra vix subtus nequaquam perspiciendis 2–3 poll. longis petiolo semipollicari, paniculis laxis trichotomis folio æquilongis ramulis divergentibus cum floribus brevissime pedicellatis ternis minute cano-sericeis, perigonii lobis ovalibus obtusiusculis.

In valle Wong-nei-chung, ins. Hong-Kong, d. 7, Junii, 1879, coll. C. Ford. (Herb. propr. n. 21045.)

By far the handsomest species known to me, perhaps most nearly allied to *C. dubium*, Nees, but quite different from any other I have seen, by its strictly elliptic leaves, suddenly narrowed into a short blunt cusp, with the three nerves very strongly and equally prominent beneath.

10. Zingiber (*Cryptanthium*) integrilabrum, sp. nov.—Bi-tripedale, rhizomate ramoso pallido pennæ anserinæ crassitie squamis ocreiformibus munito sapore fatuo, vaginis glaberrimis auriculis rotundatis, foliis lanceolatis acuminatis supra glaberrimis subtus tenuissime pubentibus 6–7 poll. longis 1¼ poll. latis, spicis terræ semiimmersis pedunculo iis circ. æquilongo suffultis v. nunc e parte inferiore caulomatis foliiferi emicantibus cylindraceis, bracteis lanceolatis acutiusculis glaberrimis brunnescentibus, corollæ eburneæ segmentis lanceolatis inferioribus angustioribus acuminatis reflexis superiore latiore acuta erecto labro elliptico lobis lateralibus vel ad dentem rotundatum crispulum reducto v. omnino obsoleto.

In monte Gough, ins. Kong-Kong, florentem plantam detexit cl. C. Ford, m. Aprili, 1881. (Herb. propr. n. 21812.)

Apparently allied to the Japanese *Z. Mioga*, Rosc., which I have not seen.

SOME ADDITIONS TO THE PERTHSHIRE FLORA.

By G. C. Druce, F.L.S.

The following plants, new records to 'Topographical Botany' for the Vice-counties of West Perth 87, Mid Perth 88, and East Perth 89, have been noticed in some recent visits to that county :—

Ranunculus Ficaria, L. Killiecrankie and Blair Athol, East Perth; Aberfeldy, Mid Perth.

Caltha minor, Syme. Ben-y-Gloe, East Perth.

Thalictrum flexuosum, Bernh. South side, Loch Tay, Mid Perth.

Papaver Lecoqii, Lam. Weem, Grandtully, &c., Mid Perth; corn-fields, Killiecrankie, rail-side Blair Athol, East Perth.

Fumaria Borœi, Jord. Weem, Mid Perth.

Polygala depressa, Wend. Heathy fields near Struan, &c., East Perth.

P. vulgaris, L. Ben-y-Gloe, Glen Shee, East Perth; Ben Lawers, Mid Perth; Ben Lomond, West Perth.

Cardamine sylvatica, Link. Glen Lyon, Falls of Moness, Mid Perth.

Silene inflata, L. Weem, Mid Perth.

S. maritima, With. Side of Garry, Blair Athol, East Perth.

Stellaria Holostea, L. Glen Tilt, East Perth.

S. umbrosa, Opitz. Road-side near Taymouth, Mid Perth.

Lychnis vespertina, Sibth. Aberfeldy, Taymouth, Mid Perth.

Arenaria serpyllifolia, L. Fortingal, Mid Perth; railway-side, Blair Athol, East Perth.

A. trinervia, L. Shady bank, Taymouth, Mid Perth.

Spergula arvensis, Reich. Common in corn-fields from Pitlochrie to Blair Athol, East Perth. *S. vulgaris*, Bœn., was not noticed.

Montia rivularis, Gmel. Loch Tay-side, Mid Perth.

Hypericum Androsæmum, L. Near Trosachs, West Perth.

Malva moschata, L. Rail-side near Grandtully, Mid Perth.

Medicago lupulina, L. Near Perth, Mid Perth.

Vicia angustifolia, Roth. Aberfeldy, Mid Perth.

Prunus spinosa, L. Woods, Scone, East Perth.

P. Padus, L. Taymouth, Mid Perth.

Rosa mollis, Willd. Aberfeldy, Mid Perth; Scone, Blair Athol, East Perth. Var. *subcærulea*, Baker. Killiecrankie, East Perth.

R. tomentosa, Sm. Fortingal, Mid Perth; Garryside, Blair Athol, East Perth.

Alchemilla arvensis, L. Sandy fields, Pitlochrie, East Perth.

Epilobium parviflorum, Schreb. Fortingal, Mid Perth; Blair Athol, East Perth.

E. obscurum, Schreb. Blair Athol, East Perth.

E. tetragonum, L. Taymouth, Mid Perth.

E. anagallidifolium, Lam. Ben Lawers, Mid Perth; road-side, Glen Shee, East Perth.

Ribes Grossularia. L. Plentiful. Taymouth, Fortingal, &c., Mid Perth; Glen Tilt, Blair Athol, &c., East Perth.

Hydrocotyle vulgaris, L. Near Bruar, East Perth.

Conium maculatum, L. Tay-side, Mid Perth.

Daucus Carota, L. Loch Tay-side, Mid Perth.

Hedera Helix, L. Glen Tilt, rare, East Perth.

Sambucus nigra, L. Scone, East Perth.

Asperula odorata, L. Glen Tilt, East Perth; Taymouth, Aberfeldy, Mid Perth.

Galium Mollugo, L. Weem, Mid Perth.

Valeriana sambucifolia, Mik. Seems to be the prevailing form in each of the divisions.

Scabiosa arvensis, L. Corn-fields, Aberfeldy, Kenmore, &c., Mid Perth.

Sonchus asper, L. Blair, Pitlochrie, &c., East Perth; Grandtully, Mid Perth.

Arctium minus, Schkuhr. Weem, Mid Perth.

Centaurea Cyanus, L. Plentiful as at Weem, Aberfeldy, Perth, &c., Mid Perth; Blair, Pitlochrie, &c., East Perth.

Petasites vulgaris, Desf. Brook-side running into north side of Loch Tay, between Fortingal and Lawers, Mid Perth.

Pyrola minor, L. Killiecrankie, Glen Tilt, East Perth.

Ilex Aquifolium, L. Glen Tilt, rare.

Veronica alpina, L. Glen Shee, just west of watershed by brook washed down from hills above, East Perth.

†*Mimulus luteus*, L. Tay-side, near Perth, Mid Perth, with *Cerastium holosteoides*.

Lamium purpureum, L. Weem, rare, Mid Perth.

Symphytum tuberosum, L. Scone Woods, Dunkeld, East Perth.

†*S. officinale*, var. *patens*, Sibth. Killiecrankie, near railway-bridge, East Perth.

Plantago maritima, L. Side of Garry, near Blair Athol, Struan, &c., East Perth; west side of Garry, Blair, Mid Perth; Glen Docharty, West Perth.

Littorella lacustris, L. Small pond in Castle-grounds, Blair Athol, East Perth.

Rumex conglomeratus, L. Aberfeldy, Mid Perth.

Polygonum Persicaria, L. Corn-fields, Blair, Pitlochrie, East Perth.

P. lapathifolium, L. Fields, Glen Tilt, Scone, &c., East Perth.

Euphorbia Helioscopia, L. Blair Athol, &c., East Perth.

Betula glutinosa, Fries. Weem, Mid Perth.

Quercus sessiliflora, Sm. The common form about Blair, &c., East Perth.

Taxus baccata, L. Fortingal, Mid Perth.

Lemna minor, L. Scone, East Perth.

Listera ovata, Br. Aberfeldy, Mid Perth.

Orchis mascula, L. Killiecrankie, rare, East Perth.

O. incarnata, L. Struan, Blair, &c., East Perth; south side of Ben Lawers, Mid Perth.

Habenaria bifolia, Br. Between Blair and Struan, East Perth.

H. chlorantha, Bab. Ben Lawers, Mid Perth.

H. viridis, L. Ben Lawers, Mid Perth.

Scilla nutans, Sm. Killiecrankie, East Perth.

Allium ursinum, L. Glen Tilt and Killiecrankie, East Perth.

Luzula multiflora, Koch. Bruar Falls, East Perth.

L. congesta, Sm. Glen Tilt, East Perth.

L. pilosa, Willd. Blair Athol, East Perth.

Carex curta, Good. Side of Garry, Blair Athol, East Perth.

C. rigida, Good. Ben-y-Gloe, East Perth.

C. remota, L. North side of Loch Tay, Mid Perth.

Melica uniflora, L. Glen Tilt, Killiecrankie, East Perth.

Poa nemoralis, L. Glen Tilt, East Perth.

Kœleria cristata, Pers. Fine specimens between Blair and Bruar, East Perth.

Equisetum limosum, L. Near Aberfeldy, Mid Perth.

Chara fragilis, var. *pulchella*, Wallr. Pond, Blair Athol, East Perth.

NATURALIZED ASTERS.

By James Britten, F.L.S.

During the stay of Prof. Asa Gray in England last year, I had the opportunity of obtaining his opinion on the names of certain North American species of *Aster* which have established themselves in this country. As these have been published in periodicals under different names, while one has not hitherto been placed on record, it may be of interest to give the result of Prof. Gray's determinations.

Aster paniculatus, Lam. (non Ait.).—This appears to be the species most thoroughly established in England. In the National Herbarium at South Kensington are specimens from Surrey (from "near Thrimble Bridge, Thames Ditton, Sept., 1865," sent to the Thirsk Botanical Exchange Club by Mr. Watson, and recorded by him in its Report for 1866 (p. 12) under the name of *A. leucanthemus*, Desf., "one root from 1860 to 1865. . . . . . it will be likely soon lost by building changes"); and from the Barnes and Richmond localities on the bank of the Thames, recorded by Mr. Hiern in Journ. Bot., viii., 8 (1870), under the name of *A. Novi-Belgii*); Oxfordshire ("Banks of canal near Worcester Gardens, Oxford, Oct., 1880, H. N. Ridley"; this is probably the plant recorded under the name of *A. Tradescanti* by Mr. H. Boswell in the 'Phytologist' for 1860 (iv., 101, N. S.) as being then "firmly established" in several places near Oxford); Worcestershire (on an island in the river at Holt, near Worcester, opposite the lock-house, and also on the bank of the river lower down, Miss E. Chandler, Aug., 1880); and Cumberland ("Shore of Lake Derwentwater, Sept. 15th, 1868, coll. Mary Edmonds"; on this a long note will be found in the 'Report of the London Botanical Exchange Club for 1868' (pp. 10, 11), and 'Journ. Bot., vii., 239, under the heading "*Aster salignus*, Willd."; it is stated that the plant had been known in this locality "for thirty years past," and was then growing "in great luxuriance, established in a bed of sedges, perhaps to the extent of the eighth of an acre").

A. Novi-Belgii, L. (non Ait.).—Prof. Gray gives this name to the plant of the Tay-side, near Perth, distributed by the Exchange Club as *A. longifolius*, Lam., on which a note is published in the Report for 1869, p. 12 (Journ. Bot., viii., 261). In this note "several other species of Aster" are stated to grow on the banks of the Tay.

A. lævis, L.—"Park Place Wood, near Henley, Oxfordshire, Herb. Rudge"; no date, but Rudge died in 1846.

There are several other records of introduced Asters, but the only specimens which I was able to submit to Prof. Gray are those above named. The Cambridgeshire (Wicken Fen) plant, described by Prof. Babington (Journ. Bot., v., 367-9 (1867)) as *A. salignus*, Willd., is there identified by him with the Tay-side species above referred to. To an unpractised eye, the specimens placed under *A. paniculatus* by Prof. Gray are somewhat dissimilar from each other; but his recent thorough study of this complicated and puzzling genus entitles his opinion to be accepted as final.

With reference to the Richmond Thames-side *paniculatus*, I first noticed it in that locality—which is just opposite the Railshead Ferry to Isleworth—sixteen or seventeen years since, when it was much more abundant than it is at present. In Loudon's 'Magazine of Natural History' for 1828 (i., 83) is a note, signed 'E. K.,' stating that *Aster Tripolium* had been gathered by the writer "in 1824 on the banks of the Thames, a little above high-water mark, on the way between Richmond and Kew." I think it likely that *A. paniculatus* may have been the plant here intended; as I doubt whether *A. Tripolium* would extend so far up the river. This record is not included in the 'Flora of Surrey,' in which, indeed, there is no mention of *A. Tripolium;* but I may perhaps be allowed to add that I have a very distinct recollection of having gathered that plant by the Thames at Battersea, at a date when 'Battersea Fields' was still in existence, and before the present Park was formed.

MARINE ALGÆ NEW TO CORNWALL AND DEVON.

By R. V. Tellam.

The following additions to the list of Algæ for Devon and Cornwall were collected by me during 1880:—

Stilophora Jolisii, Thuret.—On stones at the bottom of a salt water mill-pond at the west side of Looe, where the tide flows into the pond.

Ectocarpus Crouani, Thuret.—Growing on *Zostera marina* at half-tide at Redding Point, Mount Edgecumbe; and at Trevone Bay, near Padstow, on *Chorda Filum*.

E. ramellosus, Kuetz.—On sloping clay-slate rocks, shaded from the sun, in a small creek at Harbour Cove, Padstow.

Melobesia Lenormandi, Aresch.—On trap rocks at half-tide, at Permisson Bay, Padstow, and at Sidmouth.

M. Corallinæ, Crouan.—On *Corallina officinalis*, Trevone Bay, Padstow, and St. Minver: this does not appear to be uncommon on the Cornish coast.

Grateloupia dichotoma, J. Ag.—On the perpendicular sides of rocks in pools shaded from the sun by higher rocks or cliffs. First observed at Trevone Bay, Padstow, by E. M. Holmes. I have found it at St. Minver, and at the Gull Rocks, Plymouth, with fruit.

Callithamnion repens, Lyngb.—On *Chondrus crispus*, cast ashore at Trevone Bay.

Nitophyllum reptans, Crouan.—On the stems of *Laminaria digitata*, cast ashore at Polridmouth Bay, near Forsey.

Dermocarpa prasina, Born.—On *Catenella Opuntia*, in a shady creek, Harbour Cove, Padstow.

Monostroma lacerata, Thur.—In a pool of brackish water overflowed by flood-tides at Pendavey Bridge; also in brackish pools in the marsh below Lostwithiel.

M. Wittrockii, Born.—On posts and stems at the sides of tidal rivers. By the River Tamer above Saltash, Plym at Marsh Mills, and the River Fowey, between Lostwithiel and Fowey, high water.

SHORT NOTES.

ON THE TERMS ANNUAL AND BIENNIAL (see Journ. Bot., 1881, p. 7).—There is certainly much ambiguity in the terms Annual and Biennial. Those plants which germinate in the spring and die in the autumn are not very different from those which vegetate in the summer or autumn and flower and die in the succeeding spring or summer; nor indeed can I see much between them and plants like *Agave*, which live in a barren state for many years, and then flower once and die. It seems to be only a question of the time required to concentrate the requisite energy to produce flowers and fruit. True annual plants may be divided into Winter Annuals and Summer Annuals. The former usually store up nutritive matter in the autumn to supply the flowering state in the spring; differing in this from Summer Annuals. But this is not constantly the case. The *Agave* is many years doing this. Although this plant flowers only once, we of course ought to have a term to distinguish it from the annuals. There are also the plants which produce stoles rooting at the end, such as the sympodes of *Fragaria;* in that case the plants are truly perennial. But see such plants as *Epilobium*, where the buds at the end of stoles alone remain alive during the winter, and produce the plants of the succeeding year: what are we to call these? We usually denominate them perennial. Then how separate them from those which are not aërial, but go through the same course? Then come such plants as *Orchis*, where a new tuber is formed by the side of the old one each year, usually at a very short distance from it, but sometimes at some considerable distance, as in *Herminium;* and the tuber which has flowered dies. The tuber is therefore a Winter Annual. Of course all these ought not to be confounded with the true perennials, where the same root lives and flowers at least several years in succession. DeCandolle's terms, *mono-* and *poly-carpic* will not do; for they convey another idea. *Mono-* and *poly-tocous*, as suggested by A. Gray, are better, but here we do not distinguish between *Agave* and *Brassica*. And he has not attempted to distinguish these from *Orchis* (except by calling the latter perennial, as we all do), or *Orchis* from *Fragaria*. Here is a subject of much interest for those to study who pay attention to such matters. I hope that it will be taken up by some of the correspondents of the 'Journal of Botany.' A very interesting discussion might then take place; and, even if no valuable result is obtained on the special point under discussion, we should be sure to derive much pleasure and information from it; many things come to light unexpectedly when we follow up such a question as this into all its intricacies.—C. C. Babington.

Fumaria muralis, Sond., in Ireland.—In 1878 I gathered a *Fumaria* in a cultivated field at Malone, near Belfast, Co. Antrim, which I have lately submitted to Prof. Babington for examination. This he informs me he considers to be *F. muralis*, which must, therefore, be considered as an additional species for the Irish flora.—J. H. Corry.

Potamogeton Zizii, Roth, in Ireland (see Journ. Bot., 1881, p. 312).—In August, 1879, I gathered a plant, which Prof. Babington considers to belong undoubtedly to this species, growing close to the Lough Beg end of the new cut which connects Loughs Neagh and Beg at Toomebridge, Co. Derry. The plant grew either at the extreme end of the cut or in Lough Beg itself, and was reached from a boat; this part of Lough Beg lies in Co. Antrim.—J. H. Corry.

Chara tomentosa, L., in England.—This species has long been known to grow in Ireland, but no record of it as an English plant has been published. Among a number of specimens of the genus gathered by me last August in East Norfolk, while "dragging" for Potamogetons, were two specimens of this plant in bad condition, and sterile. They occurred along with *C. fragilis* var. *Hedwigii*, *C. stelligera*, *C. hispida*, and an elongated form of *C. contraria*, which, when collected, I thought might be *C. jubata*. I am indebted to Dr. O. Nordstedt for their determination; on the *C. contraria* he remarks "internodius longissimus ad *Chara jubatum* accedens." From the number of specimens of the genus I found in the limited extent of water I examined, I have little doubt the Broad district will be found to produce *C. stelligera* and *contraria* in abundance, and *tomentosa* more sparingly. The station was the same as *C. stelligera* occurred in, *i.e.*, the Hundred Stream, near Potter Heigham. East Norfolk will add another county to the records for *C. contraria* by Messrs. Groves in Journ. Bot., 1881, p. 355.—Arthur Bennett.

Jersey Plants.—I am indebted to Mr. Piquet for specimens of two plants not recorded for the Channel Isles:—*Hypochæris maculata*, L., from sea-cliffs in the neigbourhood of St. Ouens, Jersey; and *Carduus pratensis*, Huds., from a wet meadow, St. Clements, Jersey.—Arthur Bennett.

Aira alpina in Kerry.—In this Journal for 1881, p. 345, *Aira alpina* is recorded as found upon Brandon Mountain, near Dingle. In my "Recent Additions to the Flora of Ireland" ('Royal Irish Academy Proceedings,' vol. i., series 2, Science, pp. 256, 1872). I have also noticed the same grass as a small form of *A. cæspitosa*, which Dr. Boswell considered "undistinguishable" from the Scottish *A. alpina*. Now, from a fine series of the same plant recently collected by my friend Mr. H. C. Hart upon M'Gillicuddy's Reeks, I have no doubt that the Irish and Scottish plants are identical; and perhaps I was over-cautious in not then admitting it to the full title of *A. alpina;* but, in any case, nearly all our best botanists seem agreed to regard it as a variety only.—A. G. More.

Extracts and Notices of Books.

ON THE LIFE-HISTORY OF A CROCUS AND THE CLASSIFICATION AND GEOGRAPHICAL DISTRIBUTION OF THE GENUS.[*]

By G. Maw, F.L.S.

The author commenced his description of the life-course with the corm during its short period of rest in July intervening between the dying away of the spring foliage and the commencement of the ensuing season's growth. The newly matured corm consists of an almost homogeneous mass of cellular tissue and starch, two-fifths of its weight being water, nearly half its weight of starch. Sugar occurs to the extent of six per cent., and the small residuum consists of oil, albuminous compounds, cellulose, and a little fibrous tissue and mineral matter. The homogeneous structure of the corm is varied only by an irregular column of vascular tissue running from its base to its depressed apex, but which is dead and functionless in the new corm, being merely the remnant of the connecting-link between last year's foliage and last year's corm. The new growths, both of leaves and roots, originate independently of the old axis, by the development here and there of minute papillæ on incipient buds, which are scattered indiscriminately over the corm surface: these are, as it were, planted into the surface of the old corm, and in their expanding growth gradually absorb its substance. Every living part of a Crocus is annually replaced, and in one sense there is no continuity of life within each organ. The corm-tunic is the only permanent record of perennial existence, and even this in its living state lasts but a year.

The corm-tunics are homologous with the leaves, the main tunic covering the upper part of the corm being continuous with and consisting of the expanded base of the leaves. The author illustrated this by means of two pieces of netting, one hung vertically representing the vascular structure of a leaf, the other pulled out, literally exactly resembling a reticulated corm-tunic. On the very summit of the corm there are also small tunics or caps representing the base of abortive leaves which have been arrested in their upward development. The basal tunic is homologous with a condensed whorl of leaves united together at their base, and attached to the base of the corm. In the reticulated species it consists of a coriaceous disc, surrounded by short wiry rays, which bend upwards and inwards, and, by clasping the base of the main tunic, maintain the continuity of the covering, as the main tunic slips upwards concurrently with the corm expansion. In the annulate species the basal tunic occurs in a still more condensed form, as a series of coriaceous annuli bearing a margin of little teeth corresponding with the longer rays of the reticulated species. The author pointed out the great diversity of beautiful patterns in the tunic structure, and withal so well marked that a mere fragment was often sufficient for the determination of a species. Every gradation occurs between tunics consisting of thin membrane, thick coriaceous coats, fine parallel fibre, and an infinite variety of reticulated structures. The most aberrant are the tunics of *C. Fleischeri* and *C. parviflorus*, in which the fibres are arranged in interwoven vertical plats or strands resembling the stranded tunics of several eastern species of *Xiphium*. All these divers structures are adaptations to maintain a continuous covering during the alternate expansion and absorption of the corm.

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[*] [We are indebted to Mr. Maw for this full abstract of his very interesting paper, read at the Linnean Society, January 19th.—Ed. Journ. Bot.]

Of leaves there are two distinct sets, the outer whorl or sheathing leaves, adapted to enclose the entire ascending axis, and the inner whorl or proper leaves. In the majority of species the leaves appear with the flowers, but in ten autumnal species they remain dormant till the ensuing spring. A sheet of enlarged leaf-sections exhibited the wonderful diversity of leaf-structure: normally there is a blade and a distinct keel of about a third of its width, with intervening lateral channels; in one Spanish species, *C. carpetanus*, the distinction between the keel and blade is lost, and the leaf is semi-cylindrical, the back being sculptured into a series of regular flutings exactly resembling those of a Corinthian column; in a second Spanish species, *C. nevadensis*, a structure is found intermediate in character between the ordinary type of leaf and the leaf of *C. carpetanus*. In three eastern species, *C. vallicola*, *C. Scharojani*, and *C. zonatus*, the leaves depart from the usual structure in the opposite direction, the keel being developed to nearly the width of the blade. In some species the leaves are ciliated, and in others glabrous, and the presence or absence of more or less prominent ridges within the lateral channels was stated to be of importance for specific distinction. The author laid stress on the fact that special leaf-structure was more notably connected with geographical distribution than with the natural affinity of species. The scape, which in every species is either tetraquetrous or triquetrous, is generally about an inch or an inch and a half high at the flowering time, rapidly increasing in length at the maturity of the capsule, bringing it to or above the surface. The author stated that in those species with a short scape or nearly sessile ovary at the time of flowering, the scape was produced to a greater length at maturity than in the species having a long scape at the flowering time.

Of the foliaceous organs pertaining to the ascending axis there are two distinct series, which the author, following Baker, terms spathes, *viz.*, a membranous sheath or basal spathe springing from the base of the scape, and one or two similar sheaths springing from the base of the ovary, termed by Baker the proper spathes. The basal spathe is not always present, and its presence or absence suggested to Herbert the classification of the genus into two main groups, Involucrati and Nudiflori. The basal spathe sometimes encloses more than one scape, and in other cases there is a separate basal spathe to each of several scapes arising within the same whorl of leaves.

The proper spathe is either monophyllous or diphyllous, a character sufficiently constant for use in specific determination. In the perianth the throat is of special interest in relation to specific character, as the presence or absence of the beard, a bunch of hairs at the base of each filament, is not only sufficiently constant for specific diagnosis, but was employed by Howarth for the main grouping of the genus into two sections he termed *Piligeri* and *Depilati.* The throat internally is almost always more or less orange, and this is so constant that, whilst the general colour of the perianth is very variable, the orange of the throat, even in albinos, is constant.

The perianth segments vary from half an inch to two and a half inches in length; those of the inner whorl are a little shorter than the outer. In *C. iridiflorus* the difference is so much more striking than in any other species, that it suggested to Schur its generic separation as *Crociris.* There appear to be two distinct sets of colour-cells in the perianth, the markings on the inner surface never exactly corresponding with the outer. The feathered markings are generally external, and for the most part confined to the outer surface of the three outer segments, but in a few species, as *C. zonatus*, *C. pulchellus*, and *C. vallicola*, the more prominent markings are ranged on the inner surface of the segments. The presence or absence of markings, and even the general flower colouring, is little to be relied on for specific distinction, as the majority of species vary with striped and self-coloured flowers, nearly all the cyanic species vary in every shade to white, and the xanthic species occasionally vary to white and even blue; but there is no case in which a cyanic species varies to orange.

In colour variation there are several interesting features; a few species, e.g., *C. vernus*, *C. versicolor*, *C. asturicus*, and *C. aërius*, are essentially various in their colouring, and it is difficult to find two flowers precisely similar in the same habitat. There are other species that are perfectly constant, and, again, those that do not vary in the same habitat vary geographically, e.g., *C.*

cancellatus and *C. biflorus*, which are white at the western extremity of their area of distribution, gradually change to blue as they range eastwards. There are also numerous instances of mimetic variation, two distinct species putting on in the same habitat some identical form of special marking or colouring.

The filament is generally about half the length of the anther, but in a few species exceeds the anther; it is generally white in the orange-anthered species, and bright golden yellow in the species with white anthers. The most aberrant form is in *C. cyprius*, in which the filament is bright scarlet.

The anthers in the great majority of species are orange; in seven or eight autumnal species white, and in two species, *C. Crewei* and *C. Foxii*, dark chocolate. The colouring of the anthers is remarkably constant compared with the stigmata, the colour of which is somewhat variable within each species.

The pollen grains have also their special specific characters; in the majority of species they are regular spheres of from 1-500th to 1-200th of an inch in diameter. Some are papillose; others glabrous; and in *C. aureus* and some other species the surface is sculptured by a sinuous or spiral line. This was first noticed by Mohl, and Mr. Carruthers's observations show that it is due to a partial thinning of the outer membrane. The pollen grains are remarkable for their uniformity of size within each species, excepting in *C. sativus* and the allied species, in which the grains are of irregular outline, and very variable in size.

The stigmata present so great a variety of type and structure that the author is unable to accept the threefold classification employed by Baker, based on the degree of subdivision of the stigma. In *C. sativus* the stigmata are entire and scarlet; in the majority of species, orange more or less subdivided, and ranging to a mass of capillary subdivisions. The most remarkable departure from the more common type is in the stigmata of *C. iridiflorus*, which consist of bright purple capillary divisions. The author laid stress on the tendency to vary not only in colour, but in the degree of subdivision within each species. The stigmata in some species exceed, and in others fall short of, the anther.

The ovary both of the autumnal and vernal species remains underground till the end of April, when the scape rapidly elongates, bringing to the surface the capsule which is matured in the early summer.

Many special characters were pointed out in the seeds, of which there are two prevalent types—a glabrous oblong buff seed and a nearly spherical papillose red seed. The seeds of the autumnal species germinate in the autumn, and those of the vernal species in the early spring.

(To be continued).

Floræ Europææ Fragmentum. Auctore Augusto Grisebach . . . . . . edidit Augustus Kanitz. London: Dulau and Co.

In a notice of Nyman's invaluable 'Conspectus Floræ Europææ,' which appeared in these pages,* regret was expressed that the author had not found it possible to give a short diagnosis of genera species, thus supplying the urgent want of a general European Flora. In the pamphlet of fifty-eight pages now before us, we find that this want had suggested itself to the late Dr. Grisebach, and that he had set himself to work to supply it, when death ended his labours in 1879. Fragment as it is, this specimen cannot fail to be of interest to the European botanist. It shows that the task of compiling a general European Flora is not so great as to be impracticable; and that the space which this must occupy is not as large as might be supposed. Nyman devotes nearly twenty-two pages to the *Ranunculaceæ;* in Grisebach's fragment they occupy nearly twenty-seven pages; but the space which the latter has devoted to his diagnoses is assigned by Nyman to the not less useful synonymy of the European species. The distribution of each species is given in fuller detail by Nyman; Grisebach condenses this, but adds an indication of the extra-European range of the plants, which Nyman omits; the references to published sets, which form so useful a feature in Nyman, find no place in Grisebach's fragment. Had the latter author, therefore, been spared to complete his work, it would not have in any way supplanted Nyman; but, with the two combined, we should have had in a compendious form all that the general student would require for obtaining a good general knowledge of the European Flora.

The estimate of species adopted by the two authors is less different than might have been expected. It may be of interest to contrast the two views of the species of *Ranunculaceæ;* it will be seen that the principal difference is in the genus *Batrachium*, where there is ample room for diversity of opinion as to the limits of species:—

	Nyman.	Grisebach.
Clematis (including Atragene)	9	10
Pulsatilla	6	7
Anemone	12	10
Hepatica	2	2
Adonis	11	11
Myosurus	1	1
Thalictrum	26	19
Ranunculus (including Ficaria and Callianthemum)	94	81
Ceratocephalus	2	2
Batrachium	16	8
Nigella	5	5
Garidella	1	1
Isopyrum	1	1
Coptis	1	1
Helleborus	7	9
Eranthis	1	1
Trollius	2	2
Caltha	2	1
Aquilegia	8	10
Aconitum	6	10
Delphinium	18	17
Pæonia	3	8
Cimicifuga	1	1
Actæa	1	1
	236	219

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* Journ. Bot., 1879, p. 349.

We can but express a hope that the work, of which a specimen is here afforded, may ere long be taken up and carried to a successful issue by some competent botanist. J. B.

The Names of Herbes. By William Turner, A.D. 1548. Edited (with Introduction, Index of English Names, and Identification of Plants) by James Britten, F.L.S. Trübner & Co., for the English Dialect Society. 1881 [1882.]

The works of William Turner are valuable to the botanical student, and especially to the student of English Botany, but they have also an interest to the student of English plant-names and to the student of the English language of the sixteenth century. He had travelled much in Europe, and had seen a great part of England, except the western counties, and wherever he lived or went he was a keen observer of the native plants, and carefully recorded their native names, and at the same time he took note of all the exotics that were introduced into gardens in his day. The present book is very full of such notices. It was his second botanical work, coming after his 'Libellus,' and before his 'Herbal.' The especial object of the book was to take "the names of the moste parte of herbes, that all auncient authours write of both in Greke, Lattin, Englishe, Duche, and Frenche," and then to give their modern equivalents, with a short notice of their native countries and medical uses. He is always careful to notice whether they are found in England or not, and so by his help we get some curious and unexpected histories of our English Flora and introduced plants. He had never seen Lilies of the Valley—"it groweth plentuously in Germany, but not in England that ever I coulde see, savynge in my Lordes gardine at Syon;" he "never saw any plaine tree in Englande saving once in Northumberlande besyde Morpeth, and an other at Barnwel Abbey besyde Cambryge." The Pomegranate was grown at Syon, but even in all his European travels he "never saw any perfit date tree yet, but onely a litle one that never came to perfection." Carrots in his day were "in plentie," but French beanè or "faselles" were apparently not grown in England, but "grow in great pletie in Italy about Pavia." The long radish in his day "groweth communely in Englande," but not the turnip radish; that he had only seen "in high Almany': and the raspberry, called "in englishe raspeses or hyndberies," as apparently far from common, as he only records it "in certayne gardines of Englande."

To the student of old English the book will have a great interest, and he will be thankful for its republication by the English Dialect Society, and that it has found so able and careful an editor as Mr. Britten. Wherever the plant had an established English name, Turner recorded it; and where there was no fixed name, he invented one, and these invented names were often so happily chosen that many survive to our own day.

Mr. Britten has added two valuable appendices; the first of which gives all Turner's English names "arranged in alphabetical order, each name being followed by the modern scientific appellation." This must have been a difficult and tedious work, but Mr. Britten's large knowledge of old and modern Botany has stood him in good stead, and the index is thoroughly satisfactory, though it is probable that some of the identifications may be open to doubt. The second appendix gives the other side, or the modern Latin name, followed by Turner's English name.

We are sure that the work will be welcomed by many outside the English Dialect Society, and that among their publications it will always hold a place of honour.

H. N. Ellacombe.

The last issue (dated June 7, 1881), of Maximowicz's 'Diagnoses plantarum novarum asiaticarum' contains, besides the usual large number of new species, a revision of the East Asian *Hypericaceæ*, *Celastraceæ*, and *Corylaceæ*, an enumeration of the Chinese and Japanese species of *Ficus*, and additional notes to the author's previous revision of *Chrysosplenium* and *Pedicularis*. The following new genera are defined :—*Potaninia* (Rosaceæ, Potentilleæ) ; *Tretocarya* (Borragineæ, Eritricheæ); *Pomatosace* (Primulaceæ, Primuleæ); *Przewalskia* (Solanaceæ, Hyoscyameæ); *Circæaster* ("genus novum anomalum proximum Chloranthaceis"). The plant identified by Dr. Hance with *Anaphalis triplinervis* in this Journal for 1878 (p. 12) is referred to a new species, *A. Hancockii;* and the *Ficus* referred to *F. stipulata* by the same author (Journ. Bot., 1866, p. 54) is made the type of a new species, *F. Hanceana*.

The Report for 1880 of the Botanical Record Club is of especial interest, as it contains a full description of a new British plant, *Selinum Carvifolia*, L., which has been discovered by the Rev. W. Fowler in North Lincolnshire. Of this interesting find, Mr. F. A. Lees has forwarded an excellent specimen to the British Museum Herbarium, from which a plate is being prepared for this Journal; a full description will also be given. The "new county records" and "general locality list" are full of important additions to our knowledge of plant-distribution in Britain. A new variety (*Jacksoni*) of *Potamogeton perfoliatus* is published by Mr. Lees. The *Carex* published by Mr. Ridley last year in this Journal (p. 97, tab. 218), under the name "*C. pilulifera* var. *Leesii*" is raised by Mr. Lees to specific rank as "*C. Leesii*, Ridley." This is obviously incorrect; if a species (as to which Mr. Lees is doubtful, while Mr. Ridley places it "undoubtedly" under *C. pilulifera*), the name *Saxumbra*, previously published for it by Mr. Lees, must be retained. County catalogues are given for Flint (H. L. Jones and H. F. Parsons) and West Ross (G. C. Druce).

Dr. M. C. Cooke has begun the issue of a work entitled 'British Fresh-water Algæ, exclusive of *Desmideæ* and *Diatomaceæ*,' which seems likely to be very useful to algologists. The first part, comprising the *Palmellaceæ*, contains twenty-eight pages of letterpress and eleven coloured plates. It is published by Messrs. Williams and Norgate. Dr. Cooke's 'Illustrations of British

Fungi, to which we have before referred, has reached its sixth part and hundredth plate.

We have received from Messrs. Cassell the third series of ‘Familiar Wild Flowers.’ Both illustrations and text are by Mr. F. E. Hulme, and, speaking generally, the former are as satisfactory as the latter is disappointing and insufficient. For example, we have four pages ostensibly devoted to the Wallflower, in which we cannot find a single fact connected with the botanical history of the plant. It seems to us unfortunate that an admirable opportunity for conveying useful information about our common plants should have been neglected, and that the space which might have been thus profitably occupied should be filled with padding of a poor kind. The “Summary” with which the volume is prefaced, which is “principally a condensation from the writings of Hooker, Lindley, Bentham, and other writers on the subject,” errs in another direction, being so extremely technical as to be ‘caviare to the general.’ The initial letters and tailpieces, in which the flowers described are artistically treated, deserve special commendation; the cover of the volume, on the other hand, is very inartistic.

The concluding number of Mr. Britten's ‘European Ferns’ was issued by the same firm in January last; the completed volume having appeared in December. As Messrs. Cassell systematically omit to place any date upon the title-pages of the works published by them, it is well to put this upon record.

We are glad to receive part v. of Dr. Braithwaite's ‘British Moss-Flora,’ containing the *Leucobryaceæ* (1 plate) and *Dicranaceæ* (3 plates). The figures illustrating the work are, if possible, even more satisfactory than those in previous parts. The date on the first page, “October 1st, 1881,” should be corrected to “February, 1882.”

Articles in Journals.

Botanical Gazette (Feb.).—G. Engelmann, ‘Notes on *Yucca*’ (*Y. elata*, Engelm.=*Y. angustifolia* var. *elata*, Engelm.; *Y. constricta*, Baker non Buckley).—L. M. Underwood, ‘List of N. American *Hepaticæ*.’

Botanische Zeitung (Jan.).—L. Just, ‘*Phyllosiphon Arisari*.’—G. Krabbe, ‘On the Development, growth, and division of the apothecia of Lichens’ (2 plates).

Botanische Centralblatt (Jan. and Feb.).—V. v. Borbas, On *Aquilegia nevadensis* and *A. Othonis*.—C. Warnstorf, ‘On the *Sphagnaceæ* of the Royal Herbarium at Berlin.’—H. Müller-Thurgau, ‘On Metastasis in starch-producing plants.’—O. Heer, ‘On the Geological Age of the *Coniferæ*.’

Botaniska Notiser (Feb.).—K. Hedbom, ‘*Gymnadenia conopsea*, Br., × *G. albida*, Rich., and *Draba alpina*, L. × *D. Wahlenbergii*, Hn.’—C. J. Johanson, ‘*Linaria vulgaris*, Mill., × *L. striata*, DC.’—G. Lagerheim, ‘Contributions to the Flora of Gothland.’

Flora (Jan. and Feb.).—C. Kraus, 'On the course of the Sap in Plants.'—O. Böckeler, 'New *Cyperaceæ*.'—G. Limpricht, 'On *Jungermannia marchica*.'—O. Penzig, 'On the ovules of *Scrophularia vernalis*.'

Hedwigia (Jan.).—C. Warnstorff, 'Bryological Notes for West Prussia.'

Magyar Növenytani Lapok (Jan. and Feb.)—C. Szász, 'The Botany of Dante's "Divina Commedia."'—A. Kanitz, 'Observations in the interest of a new Nomenclator Botanicus.'—J. Schaarschmidt, 'On the thallus of *Vaucheria*.'—(Supplement), 'Reliquiæ Grisebachianæ; Flora Europæa Fragmentum.'

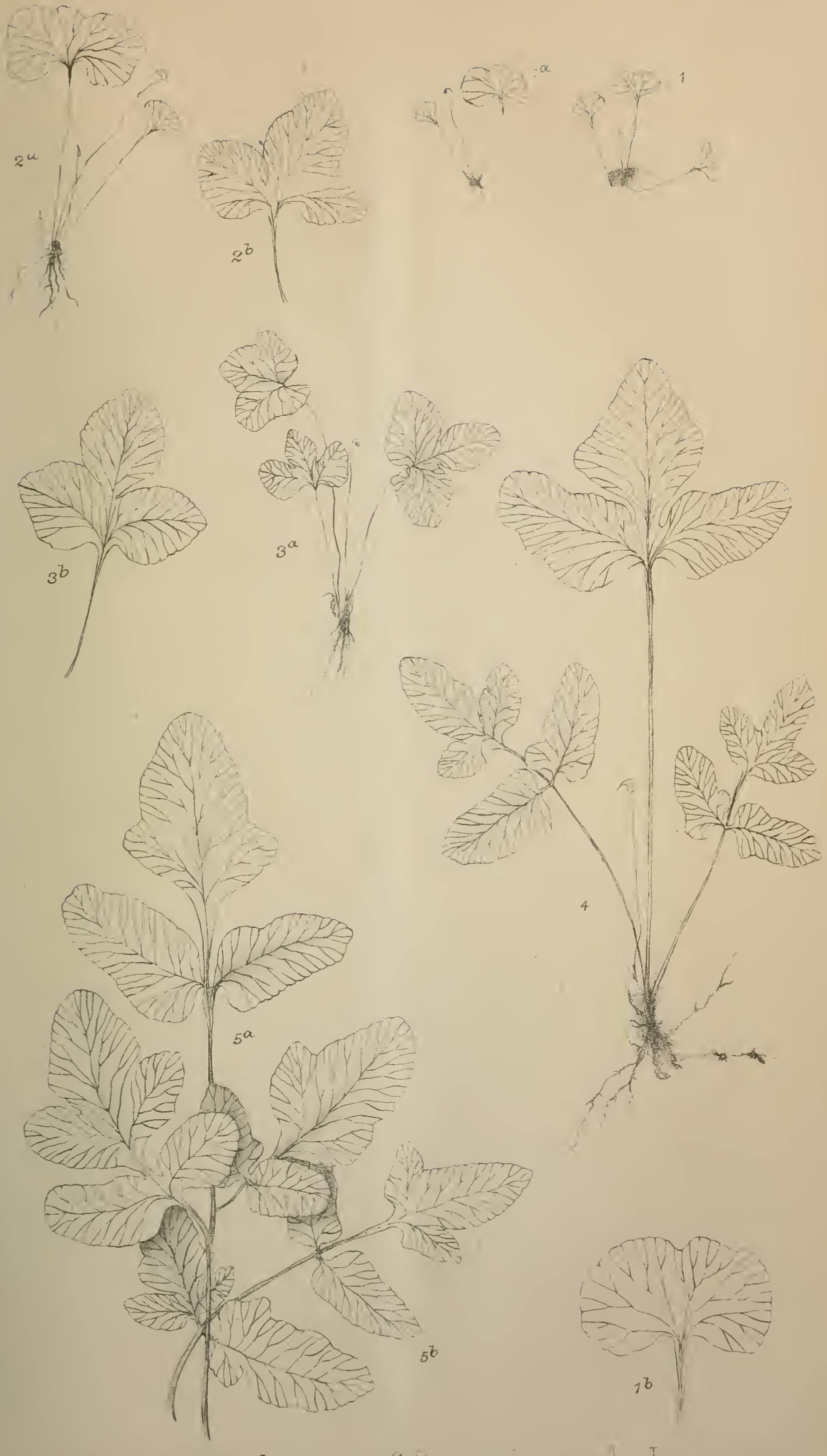
Midland Naturalist (Feb.).—J. E. Bagnall, 'Flora of Warwickshire' (contd.).

Œsterr. Bot. Zeitschrift (Feb.)—H. Wawra, 'New Brazilian Plants' (*Oxymeris megalophylla*, *O. Itatiaiæ*, *Purpurella Itatiaiæ*, *Maytenus Itatiaiæ*, *Polygala Itatiaiæ*, *Pavonia parabica*).—J. B. Keller, '*Rosa Braunii*, n. sp.'—W. Voss, 'On *Clathrus Hydriensis* of Husquet.'—V. v. Borbas, '*Roripa anceps* and *R. Sonderi*.'—C. Fæhlner, 'On the Moss-flora of Nether Austria.'—P. Sintenis, 'Flora of Cyprus' (contd.).—P. G. Strobl, 'Flora of Etna' (contd.).

LINNEAN SOCIETY OF LONDON.

January 19th, 1882.—Sir John Lubbock, Bart., F.R.S., in the chair.—The death of Mr. Richard Kippist, the Society's former Librarian, was announced, and the meeting recorded their sense of his efficient and faithful service for nearly half a century.—A valuable donation of books from the late Treasurer (Mr. Fred. Currey) was also announced, and the Society's thanks accorded.—A paper was read by Mr. George Maw, *viz.*, "Notes on the Life-history of a Crocus, and Classification and Geographical Distribution of the Genus," of which we are enabled, by the kindness of the author, to give a full abstract (see pp. 86–90).—The Rev. G. Henslow read a Note on the occurrence of a Staminiferous Corolla in *Digitalis purpurea* and in *Solanum tuberosum;* staminody in either case having hitherto been but seldom recorded and figured.

February 2nd, 1882.—C. B. Clarke, M.A., Vice-President, in the chair.—The Rev. B. Scortechini and Mr. John Marshall were elected Fellows of the Society.—Mr. E. M. Holmes drew attention to specimens of Cinchona bark cultivated in Bolivia, belonging to the *verde* and *morada* varieties of Calisaya, which have hitherto not been cultivated in the colonies, but deserve notice on account of the large yield of bark and good percentage of quinine, on which account they are found to pay the Bolivian planters better than the well-known *Ledgeriana calisaya*.—Mr. John R. Jackson exhibited a specimen of the Australian native "Pituri" bag. Formerly the leaf of the plant was only known, but Baron v. Mueller quite lately has found fruit and flower, and identified the same with *Duboisia Hopwoodi.*—The Secretary read a paper entitled "Botanical Sketch in connection with the geological features of New South Wales," by Mr. Robert Fitzgerald. The Botany of the above area may be grouped into:—1. That of the sandstone or poor country represented by the *Proteaceæ*, *Epacrideæ*, and *Xanthorrheæ;* 2. Eastern slopes of coast range represented by *Urticaceæ* and *Palmæ;* 3. Cold mountain sands represented by *Doryphoræ*, *Filices*, and *Myrtaceæ;* 4. Interior plains represented by *Chenopodiaceæ* and *Compositæ*. How has the distribution of the vegetation originated? That the Australian continent has risen slowly is gathered from numerous proofs, among others, the horizontality of the strata being very manifest. In its uplifting, the outer rim of the continent was slightly more elevated than the interior, and what between a once inland sea, marshes, and mud, and a once probable greater rainfall, Mr. Fitzgerald surmises that to this latter much of the physical features depend. Whence the coal seams? Are they not the remains of vegetation borne from a continent which has been eastward of Australia?—New Zealand, Norfolk, and Howe's Island being outliers. The most typical Australian vegetation is the group *Proteaceæ*—a very ancient family, extending back to the secondary period of Geology, from which time Australia apparently has never been submerged. The remarkable close relationship and insensible gradation, so that there is great difficulty in separating species of *Eucalyptus*, *Banksia*, &c., point out that none, or few, of the connecting links have been lost, as must necessarily have been the case had repeated submergence and elevation occurred. Many curious problems as to the fertilisation of the *Proteaceæ*, including *Stylidieæ* and *Goodeniaceæ*, yet await investigation. The group of the *Palmæ* and *Urticaceæ* possibly may have had an Asiatic origin, through the Malayan Archipelago. They appear not to be truly of Australia, but themselves colonists long established. Among the third group *Doryphora* holds a conspicuous place, and is evidently of Australian derivation. The peculiar vegetation of the fourth group, Chenopods and *Compositæ*, are rapidly becoming one of the past, and the small species even now are giving place to introduced grasses and weeds. Apart from the four groups in question, as regards the *Acacias* and *Eucalyptus*, they have the widest distribution and complicated genera. They both appear to be genera at their zenith, having existed long enough to pass into redundant forms, but not long enough to have been exposed to vicissitudes and decline. Their absence from Howe's Island and New Zealand shows they in all likelihood did not belong to the supposed submerged eastern continent, nor are they old enough to be found along with the Laurel and other remains of the gold drift.


2a
2b
a
1
3b
3a
4
5a
5b
1b

Development of Osmunda regalis L.

[illegible] West Newman & Co

Original Articles.

ON SOME POINTS IN THE DEVELOPMENT OF *OSMUNDA REGALIS*, L.*

By Charles P. Hobkirk, F.L.S.

(Tab. 228.)

The object of the following notes is to draw the attention of botanists and fern-growers to some points in the development of this fern, after the appearance of the first growth from the prothallus—points which I have not seen previously noticed. My attention was first given to these points by accident. I had growing, in a window-case built outside my dining-room window, a fair-sized plant of *Osmunda regalis*, which cast its spores freely. The window-case is a large one, some ten feet long by five feet broad, and in one portion is a small pond with a fountain, the spray from which keeps the plants well supplied with constant moisture. About six years ago I noticed small young plants springing from a prothallus close to the original plant. These young growths were so unlike the then supposed parent that I watched their development carefully, and have continued to do so during the last six years; and it is the result of this careful watching to which I am desirous of calling attention.

I have nothing to remark on the development of the spores into the prothallus, and the first growth of the cells from the fertilised archegonia, except that the production of antheridia with me has been remarkably prolific. Dr. Kny has published an elaborate paper on this early development in Pringsheim's 'Jahrbuch,' vol. viii., and, so far as I can judge, my observations commence about the stage at which he leaves off. The prothallus has usually appeared about the month of February, and in about a month or six weeks afterwards have appeared at its edges the first young frondlets. This first frondlet is a small expansion of cellular tissue, rarely more than one-eighth of an inch in diameter, but in some few instances reaching a quarter of an inch. This is supported on a thin seta about a half to three-quarters of an inch in height. The leaf-like expansion is irregularly oval in shape, either slightly lacerated or faintly crenate on the margin, and is generally notched at that portion of the edge immediately opposite to its junction with the footstalk, thus giving it a slightly lobed appearance. The principal vein or midrib divides into two immediately after leaving the footstalk, one branch turning to the right to one lobe, the other to the left to the other lobe, when they each again divide into four secondary veins, and from these, others fork off towards the margin. The two principal veins, however, only subdivide each in its own lobe, and their respective forks do not ever cross an imaginary line from the notch to the footstalk. Two or three similar frondlets may grow from the same point of the prothallus, and each will send down a rootlet or two, but this is all the growth that is made the first year. There is no branching of any kind, but only a single leaf-like expansion at the summit of the single hair-like footstalk.

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* Read before the British Association, at York, 5th September, 1881.

The second year there appears from the same rootlets a rather more developed frondlet, arising from a small winter bud, which remains after the first growth has withered. This second year's frondlet is more distinctly reniform, and occasionally shows itself in a form passing towards the next year's product. In other respects it differs but little from the first year's, excepting in its larger size and more developed lobes.

The third year's frondlet is generally decidedly *ternate*, or *trilobate*, but occasionally a frondlet is produced which is a kind of passage form from that of the previous year, or sometimes indicating the outlines of the next year's. In what we may call the normal third year's form, *i. e.*, the trilobate frond, the principal vein divides very shortly above the junction of the stem into three other principal veins, which pass severally towards the apex of each lobe, and these again subdivide in forks towards the apex and edges, but, as in the previous instances, not passing over the imaginary line dividing the lobes. Another vein is given off, also, from each of the side veins, near their base, passing in a downward direction to the base of the lobes.

In the fourth year we have a much more complicated arrangement, showing a decided and gradual approach towards the perfect plant. One large tripartite frondlet is first thrown up on a long slender hair-like stem, and afterwards other shorter fronds. The latter bear at their summit a similar-shaped tripartite pinnule to the first-formed one, only much smaller, and below it a pair of pinnules very similar to the ordinary pinnules of the perfect plant, one on either side of the rachis, and are more or less auricled at the base. The rachis of the first-formed frond forms a mid-vein which runs up through the centre of the terminal pinnule, and throws off, close to its junction with the laminæ, two other side veins which run towards the apex of the other two pinnules, with a short descending branch to each, as in the third year's form. Sometimes the fourth year's plant is of a more luxuriant growth, and exhibits a kind of transition form towards the next year's. This often bears on its first-formed frond a *perfectly trifoliate* set of pinnules, the terminal one being irregularly trilobate.

The fifth year's bears a similar primary-formed frond, *perfectly trifoliate* with a trilobate irregular terminal pinna, and lower down on the rachis another very similar frondlet, having the terminal pinna more regular. The second and subsequent fronds, which are more numerous than in the fourth year, generally consist of a tribolate terminal pinna, with a pair of simple pinnæ, one on either side below it, and lower again another pair of irregular trilobate pinnæ. Thus the fifth year, as compared with the fourth, shows the terminal trilobate pinnule has divided into three leaflets, forming a pair of pinnæ and another trilobate terminal one; whilst the fourth year's free pinnæ have become more developed, and begin to show further signs of division into secondary pinnules, approaching the normal bipinnate form. Some specimens show this further division more distinctly than others.

It is not until the sixth year that *Osmunda regalis* arrives at the perfect normal form, and begins to bear spores, and I have here one growing specimen, which I have carefully watched through all these stages of development, until now in its sixth year it is producing spore-spikes for the first time.

It is not a matter of surprise to me that botanists collecting this fern in its native bogs should not have noticed these phases of growth, but I am surprised to find that all the gardeners and fern-growers to whom I have mentioned the matter, and shown the specimens, state that it is quite new to them. I may say that no works to which I have had access contain any remarks on the subject—neither Hofmeister's 'Higher Cryptogamia,' Sachs' 'Textbook,' Dr. Kny's 'Beiträge zur Entwickelungsgeschichte des Vorkeimes von *Osmunda regalis*,'* nor Milde's 'Monographia generis Osmundæ, &c.' The drawings are made from the specimens exhibited at the British Association meeting.

Explanation of Plate 228.—1. First year's growth from prothallus. 1 *a*. Frond. 1 *b*, same magnified to show venation. 2 *a*. Second year's plant, normal form. 2 *b*. Abnormal form of a frond from another plant. 3 *a*. Third year's plant. 3 *b*. Third year's plant, a more robust form. 4. Fourth year's plant. 5 *a*. Central and chief frond of 5th year's plant. 5 *b*. Secondary or side frond of same. All natural size and complete growth, except 1 *b*, and 5 *a*, *b*, in which the stipes should have about one inch added to the base.

NOTES ON THE RUBI OF WARWICKSHIRE.

By James E. Bagnall.

For twelve years past I have given special attention to the Rubi of Warwickshire. During that period I have collected and carefully examined specimens belonging to this group of plants from nearly every part of the county. As it may interest some of the readers of this Journal to know the result of my investigations, I now give a list of the Rubi I have found, the distribution of each subspecies or variety throughout the county (so far as my personal experience allows me), and such notes on the plants as I think may be of interest. The appearance in 1869 of Professor Babington's valuable monograph of 'The British Rubi' gave me my first interest in this group; and the constant study of this work, together with a careful examination of a fasciculus of specimens from the late Rev. Andrew Bloxam, gave me a better idea of the distinctive differences of the various forms than I could have obtained without such valuable and needful help. In the summer of 1870 I paid a visit to Mr. Bloxam, at his vicarage at Twycross, and during my visit gathered, under his special guidance, some thirty or more of the Brambles which grew in and about Twycross. This was a grand help, and the day was a red-letter one in my botanical experience; for, however valuable a well-preserved specimen may be, its value is small compared with that of seeing the plant growing, and having its leading features pointed out by a master of the study. During Mr. Bloxam's life I had the advantage of consulting him frequently, either by letter or personally, so that I am deeply indebted to him for much of the knowledge I have gained in this study.

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* Pringsheim's 'Jahrbuch,' vol. viii., pp. 1—15, plates i.—iii.

To Professor Babington I am under even greater obligations, for during the past twelve years I have constantly sought his aid, either to confirm or determine many of the plants I have collected, and this aid has always been given with a kindness and courtesy I shall ever remember with gratitude. I have also to acknowledge the kind attention of Mr. J. G. Baker to a series of these plants forwarded to him in 1870.

Few counties appear to be more productive of Brambles than Warwickshire. This I believe is due to the great prevalence of sandy soils in this county, for the Bramble is a true lover of such soils. This partiality is evidenced by the fact that in the northern portion of the county we get not only a greater abundance of bushes, but a far greater diversity of forms than is seen in any equal area on the calcareous soils of the southern portion of the county. Another feature of North Warwickshire is the abundance of wild lanes and luxuriant hedgerows, and in these wild and unkept hedges the Bramble finds a constant and a congenial home.

For convenience I have divided the county into two large districts:—(1.) The Tame Basin, comprising that portion of the county which is drained by the brooks, streams, and rivers which feed the Tame; this comprises nearly all North Warwickshire, and the whole of this district belongs geologically to the upper and lower new red sandstone, the Permian, and a portion of the coal-measures. (2.) The Avon Basin, comprising that portion of the county which is drained by the various affluents which feed the Avon; this comprises South Warwick and a small portion of North Warwick. In this district there is a large area belonging to either the upper or the lower lias, but in the northern part of this Avon Basin the new red sandstone prevails. To illustrate these notes I have forwarded, for the British Herbarium of the Natural History Museum, a series of specimens, the numbers attached to which correspond with the number placed before the name of the various species or varieties in the following pages. I have thought it well to send this collection to a public institution, as it will enable those who study these plants to form an opinion as to how far my views and their own are in accord. With some one or two exceptions, which I have duly indicated, the following list is a record of my own observations, and from every station enumerated I have one or more specimens of the plants mentioned in my herbarium.

1. *Rubus Idæus*, L.—In woods, copses, hedges, and damp waysides. Locally abundant. (1) Abundant in Sutton Park; lanes and woods about Middleton; Coleshill pool and bog, Marston Green; near Hampton-in-Arden; lanes about Packwood. (2) Woods near Rugby; Allesley; Kingswood; Honily, Woodloes. In most of these stations abundant, and as wild apparently as the commonest bramble.

2. This is a variety having a nearly prostrate habit, and ternate leaves on the barren stem, growing abundantly on marly banks near Meriden Shafts, in the lane leading to Fillongley.

3. *R. Idæus*, L., *β. Leesii*, Bab.—In marshy places, very rare. (2) In a marshy thicket at The Woodloes, near Warwick. If this plant is the true *R. Leesii* it does not deserve a higher rank than that of a form, as it may be readily traced here to the typical form. The fruit appears to be abortive. This plant is scarcely like that I saw in Mr. Bloxam's garden at Twycross, grown from the original *R. Leesii*, but it is possible that cultivation may have made Mr. Bloxam's plant more robust in habit.

4. *R. suberectus*, Anderson.—In damp woods and by pools. Very rare. (1) The specimen sent is from Olton pool, near Solihull, and was named by Mr. J. G. Baker in 1871 as typical *suberectus*. I also find it in a wood near Solihull; in Arley Wood; and in Ironestone Wood, near Oldbury. (2) Mr. Bromwich sent specimens to the Exchange Club in 1867, from Clodyland Wood, near Honily. I have also seen in Haywoods a bramble I take to be this variety.

5. *R. fissus*, Lindl.—In damp woods and boggy heath lands. Very rare. Confined, I think, to the Tame Basin. (1) In Sutton Park it occurs in abundance both in woods and in boggy places. Very characteristic in Chelmsley Wood, but sparsely represented. It also occurs in Trickley Coppice, Middleton, and in Cut Throat Coppice, Solihull.

6. *R. plicatus*, W. & N.—In woods and on heath-lands; rare, but abundant where it does occur. (1) Heath-lands and woods in Sutton Park; heathy waysides between Stonebridge and Castle Bromwich. Reported in 'British Rubi,' p. 67, from Baxterley Common and Bentley Wood. I have never been able to find it in either locality. Apparently restricted to the Tame Basin. Prof. Babington pronounces the specimen sent to be the variety *rosulentus*.

7. *R. affinis*, W. & N.—In woods and on heath-lands. Rather rare. (1) In several places in Sutton Park. In lanes near Coleshill Pool and Marston Green; lanes near Hampton-in-Arden. The plant from Sutton Park was confirmed by Prof. Babington in 1871. (2) Abundant in the road from Rugby to Dunchurch, 1880. A bramble having a strong affinity to this is abundant on Coleshill Heath.

8. *R. hemistemon*, Mull.—In copses and quarries. Apparently very rare. This was first found by Rev. A. Bloxam (1) at Atherstone Outwoods, and communicated to Prof. Babington under a different name. The specimens I send are from bushes I first noticed in a sandstone quarry near Berkswell, in 1874. Specimens from the same locality were named *R. hemistemon* by Prof. Babington in 1881. The plant is very abundant both here and in a small coppice near the quarry. Like *R. plicatus*, it flowers very early; as early as May in some seasons, and continues flowering till late in the season.

9. *R. Lindleianus*, Lees.—In hedges and on heath-lands and heathy waysides. Is more or less abundant throughout the county. (1) In Sutton Park, and in the lanes about Marston Green and Coleshill Heath, I find a broad-leaved form, which Prof. Babington considers to be the *R. nitidus* of Bell Salter. This form is very near *R. affinis*, differing, however, in the armature of the panicle and the clothing of the leaves.

10. *R. rhamnifolius*, W. & N.—In hedges, thickets, and on heathy waysides. Locally abundant. (1) In a few spots in Sutton Park; lanes about Marston Green and Coleshill Heath; Ridge Lane, near Bentley Park; Brockhill Lane, near Honily; lanes about Solihull and Umberslade. (2) Lanes about Rowington and Baddesley Clinton; Rounshill Lane, Kenilworth; near Allesley. The typical plant is fairly well marked, but some of its forms, especially the variety (11) *cordifolius*, are closely like some of the forms of *R. macrophyllus* var. *β*. The *cordifolius* form has a similar range to the type.

12. *R. ramosus*, Blox.—In quarries and hedges. Very local, but abundant in the two stations from whence I record it. In a lane at Minworth, the main element of the hedge for about twenty yards. In a stone quarry near Hartshill. Very abundant, and usurping the quarry to itself. From the first station it was sent to Prof. Babington, who suggested that it might be *R. ramosus*, and it was afterwards confirmed as that subspecies by Mr. Bloxam. When I visited Mr. Bloxam in 1875, he told me he had only found *R. ramosus* in one Warwickshire station. That was in the Dunchurch road, from Rugby, and, as he marked on my map the exact spot, I went in search of this bramble in 1880, but could not then find a trace of it; possibly the plant had been destroyed. At first Mr. Briggs was inclined to consider the Warwickshire plant from Minworth distinct from the Plymouth plant, and it certainly differs very markedly; recently, however, Mr. Briggs has sent me other specimens from that neighbourhood, which more nearly approach our plant. He says, respecting these Plymouth specimens, "I am glad you think that form of *R. ramosus*, Blox., from Thornbury, so near that of your neighbourhood. It seems to me too near the more general plant of this neighbourhood, which was named *ramosus* by the late Mr. Bloxam himself, to be separated from it specifically; hence, after all, the *ramosus* of Devon and Cornwall may be essentially one with that of Warwickshire." This, I think, is a very interesting and satisfactory opinion.

13. *R. discolor*, W. & N.—In hedges, thickets, waste heathy places, and occasionally in woods; is distributed throughout the whole county. In many of the calcareous districts of the Avon Basin being the prevailing bramble. In some of its forms approaching somewhat closely the var. *a.* of *R. leucostachys.*

14. *R. thyrsoideus*, Wimm.—In hedges. Rare, and thinly spread. It was sparsely represented at Marston Green (1) a few years since, but seems to be cut down every year, or is eradicated now; (2) occurring constantly in hedges from Alveston Heath, near Stratford-on-Avon, to the Loxley road, a distance of about a mile. The plants from these stations are what Mr. Bloxam considered to be typical *R. thyrsoideus*, and are identical with his fasciculus specimens, and with specimens gathered at Twycross in his presence.

15. *R. thyrsoideus*, var., is a broad-leaved form, very different from type. This I find (2) at Tardebig and Hewell Grange, an outlying part of the county, and in hedges about (1) Shirley and Solihull. On the Tardebig plant Prof. Babington remarks, "This I call a fine form of *R. thyrsoideus*, very near if not identical with Bloxam's *macroacanthus*, but his authentic specimens have rather different shaped leaves." Mr. Bloxam, to whom I sent specimens, said he should call it a variety of *R. discolor*. I think, however, that Prof. Babington's opinion is the more correct.

16. *R. macroacanthus*, Bloxam.—Occurs in hedges between (1) Hartshill and Mancetter. Mr. Bloxam gave me the locality, and I found the plant quite abundant. Very like the Tardebig plant, but with more strongly declining prickles on the panicle.

17. *R. leucostachys*, Sm.—In hedges, copses, and heathy places. Rather local in the typical form. (1) Sutton Park; Maxtoke Park; lanes about Solihull; Meriden; Knowle, &c. (2) Alveston pastures, Stivichall Common; Kenilworth.

18. *R. vestitus*, W. & N.—In hedges and woods. Much more frequent and abundant than the last, quite the prevailing bramble in some districts. (1) Olton; Maxtoke; Meriden Shafts; Arley; Sutton; Trickley Coppice, &c. (2) Allesley; Kenilworth Heath. A peculiar form, with ternate leaves and hairy glandular stems, is abundant near (2) Hewell Grange; and a similar form, having adpressed fruit sepals, is abundant in Little Shortwood, near Tardebig. The type has usually beautiful purple flowers, but this *vestitus* variety has the flowers quite as frequently white.

19. *R. Grabowskii*, Weihe, I believe Mr. Bloxam found in (1) Hartshill Wood, but I have never been able to find it there. I saw it in Mr. Bloxam's garden at Harborough-Magna, introduced from Leicestershire.

20. *R. Colemanni*, Blox.—In quarries and hedges. Very rare. (1) In a quarry near Hartshill, confirmed by Prof. Babington; also what I think is this from the north end of Sutton Park. A singularly prickly form, which Prof. Babington thought might be this, occurred about three years since in abundance on banks near New Park, Middleton. Since that time I have never been able to find a trace of it, the *vestitus* form of *R. leucostachys* having

quite overgrown it. (2) The station near Coventry railway-station mentioned in 'Brit. Rubi,' p. 130, is quite destroyed by recent building and other alterations.

21. *R. Salteri*, Bab.—In woods. Rare. (1) In a small wood near Solihull, named thus by Prof. Babington. Arley wood, abundant. On this Prof. Babington remarks, "Bloxam's *Salteri*."

22. *R. Salteri*, b. *calvatus*, Blox.—In quarries and on marly waysides, and rarely in hedges. (1) Abundant in a quarry near Berkswell; on marly banks near Oldbury sparingly. (2) Wyken Lane, near Coventry, named by Prof. Babington. A very different form from the Berkswell plant.

23, 23*, 23**. *R. carpinifolius*.—On heath-lands and heathy waysides. Rather local than rare. (1) Abundant on Sutton Common; named by Prof. Babington. Middleton Heath; Brockhill Lane, near Honily. (2) Kenilworth Heath; confirmed by Prof. Babington, who says, "It is very like the tomentose plant referred to in 'Brit. Rubi,' 139, from Mr. Hort."

24. *R. villicaulis*, W. & N.—In hedges and woods. Locally abundant. (1) Doe Bank, near Sutton; confirmed by Prof. Babington. Trickley Coppice; New Park; and Middleton Park; the plants from the last three stations differ from the type in the more glandulose setose, prickly stem. A narrow-leaved form occurs in lanes near Solihull and Hampton-in-Arden. The Trickley coppice plant is numbered 25 in the set of specimens sent to illustrate these notes.

25*. *R. adscitus*, Genev.—On heathy waysides. Very rare. (1) Lane out of Brockhill Lane, Honily. This seems to be the nearest approach we have in Warwickshire to Mr. Briggs's Devonshire plant. (2) Coventry Road, near Allesley, named *derasus* by Prof. Babington. An abnormal state of this occurs in abundance in New Park, Middleton. This is the *R. heteroclitus* of Bloxam. A notice of this plant is given by Prof. Babington in 'Journ. Bot.,' 1878, p. 208.

(To be continued.)

THE CITATION OF BOTANICAL AUTHORITIES.

I HAVE no great wish to embark on the troubled waters of controversy, relative to Article 50 of the 'Laws of Nomenclature,' but 51 the invitation given on page 5~~6~~ of the current volume of this Journal induces me to set forth the plan on this point which I find myself compelled to follow, in preparing a revised edition of Steudel's 'Nomenclator.'

It is evident at the outset that all publishing botanists are in this dilemma, either that the present practice must be abandoned or Art. 50 must be broken. There must be a greater or less amount of inconvenience, whichever plan be adopted, and as arguments can be adduced from both points of view the lesser evil must be chosen. Taking this consideration as my basis, I must confess that the rigid adherence to Art. 50 would produce such extremely inconvenient results that I cannot take the responsibility of adopting it. I can affirm most unhesitatingly that the majority of botanists are still in the habit of using that method of quotation, which is older than the binomial nomenclature itself; in other words, this is stating that the first clause of the Article now under discussion is practically a dead letter; for confirmation of this, refer to the names cited on page 54.

Were Art. 50 in its entirety adopted to-morrow as the rule of citation, we should find ourselves face to face with some very curious quotations. Probably the first instance which will occur to every one is in the case of Robert Brown's genera in the second edition of Aiton's 'Hortus Kewensis.' These genera, *Mathiola*, *Malcomia*, and the like, were known to be Brown's from the very first; they were so cited during his life, were reprinted twice under his name, and if we are required to ascribe them, not to the elder Aiton, but to *Aiton fil.*, a man quite unknown as a botanist, it must be on some more cogent grounds than those now advanced. But I will take one of the earliest instances on record; in the first edition of the 'Genera Plantarum' Gronovius described the genus *Linnæa*, and that genus has hitherto been quoted as of Gronovius; now following Art. 50 in its spirit, we must write *Linnæa*, L. Rafinesque described a genus to bear his own name, but Linnæus certainly had not the effrontery to do so.

Continuing this line of thought, we arrive at the fact that a paragraph signed by author A, which may be issued in a volume by another writer B, would also have to bear the name of the publishing author B, according to Art. 50; for the Article is absolute, and does not discriminate between a full description or merely a name. This view is maintained by the statement of M. DeCandolle in 'Bulletin de la Société de Botanique de France,' xvi. (1869), p. 77.

I will practically apply this rule. The Report for the year 1880 of 'The Botanical Exchange Club' was issued without any editor's name on the title-page, but on the last page there is a correction for the 1879 list, signed by "James Groves"; this looks as if it referred only to the correction, but may, and probably does, refer to the fact that he was editor for 1880 as well as for 1879. At page 37 of this pamphlet is a diagnosis in English of *Spartina Townsendi*, signed by "H. and J. Groves." I should style this species *Spartina Townsendi*, H. & J. Groves, but by Art. 50 it should be attributed to J. Groves, with a strong mark of doubt as to the authorship.

With regard to dates having a misleading appearance, as adverted to by Mr. Britten on page 54, that seems inevitable, but it is not confined to plant-publications. Coins may be hoarded for a century, and when put into circulation their condition seems to belie their date; MSS. of ancient writers may be published long after the death of the writers, but the editor's name is not allowed to supersede that of the author. Linnæus's 'Flora Dalecarlica,' for example, may appear odd with the date of 1873 upon it, when we know he died in 1778; but I have heard no captious criticism upon that point.

To me it appears as if the *double* function of the author's name appended to the specific and generic names had been lost sight of when the objectionable Article was drafted. If it bears the semblance of homage, it must also bear the weight of responsibility. If Koch, when describing *Orchis Traunsteineri*, states "(Sauter *in litt.*)," it is clear that he repudiates the idea of being considered its father. What would be thought in private life of persistently giving a name to a child which was openly denounced by its father?

The "bibliographical help" plea may also be pushed too far. In Loudon's 'Encyclopædia of Plants' there are many Linnean species with "W." appended to them—that is, a "bibliographical help" is given to show that a description will be found in Willdenow's edition of the 'Species Plantarum.' But will any reasonable man demand that this plan should be again reverted to?

I think Dr. Asa Gray's position on this question is the true one. It practically amounts to this, that because Smith happens to lodge with Jones, and comes out of his street door, we do not call him Jones, and insist that he must so style himself, because otherwise the local directories and parish records will fail to indicate his whereabouts.

In fine, my contention is that Art. 50, so far as relates to its first clause, was virtually stillborn; from the date of its promulgation scarcely any one has followed it, whilst numberless writers have gone contrary to it. I consider, therefore, that it falls under Art. 4, clause 3:—"In the absence of rule, or where the consequences of rules are questionable, *established custom becomes law*."

B. Daydon Jackson.

When we forwarded the ms. of our "Notes on British *Characeæ*" to the Editor, he assured us that, to the best of his belief, in citing as the authority for a species the author who first published a description, and not him who is supposed to have first used the name in ms., we stood alone among British botanists. We think it therefore desirable to state the reasons which appear to us to necessitate this course, *viz.*, that the quotation of the ms. author as the authority is extremely inconvenient in practice and strictly inaccurate in statement.

In the first place, we maintain, as followers of the binomial system of nomenclature, that the authority does not form part of the name, but that the addition is only made for convenience of reference to the original description,* as two similar names, with different authorities, cannot exist, the later being necessarily invalid.

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* It seems necessary to state this, as some botanists have held that the authority does form part of the name, and some have even gone so far as to purposely omit the comma between the name and the authority, a course which we think cannot be too strongly condemned, as introducing trinomial names composed of mixed languages.

Those who have attempted to work out the synonymy of a group must know the great inconvenience arising from the system of quoting ms. authorities, as it frequently happens that one meets with a name quoted as of an author, and, after searching through all his writings, is unable to find any mention of the species in question: we have met with many cases of this kind among the *Characeæ*.

We think, however, that perhaps the most flagrant instance of the evil of quoting other than the publisher as the authority, is that of Robert Brown and Aiton's 'Hortus Kewensis,' already referred to in this controversy. Here we have a book, stated on the title-page as "By the late William Aiton; the second edition, enlarged by William Townsend Aiton;" and from this book we are asked to quote, among others, "*Mathiola*, R. Br." although there is no mention whatever, under that genus, that Robert Brown had anything to do with the name. We have been told that "everybody knows" that Robert Brown described *Mathiola* and the other things, but how does "everybody know" in the absence of evidence in the work itself? If we are to go beyond the evidence in a book, as to the authorship of species therein described, where are we to stop? as Robert Brown is not the only instance of one man doing the work and another taking the credit; and to be consistent, if it should be discovered, at a future time, that another than the one whose name appears to a book, had described species therein, it would be necessary to alter the authority, and this would do away with the certainty of the authority for every name.

It is open to question, in the majority of cases, whether, as the author of a manuscript name has not thought it worth while to publish it, anyone is justified in quoting him for the species, as the evidence points to an uncertainty, on his part, as to its specific value. Of course, in such a case as that of Welwitsch, this does not altogether apply, as he no doubt intended, had he lived, to publish most of his ms. species, although a certain percentage must almost necessarily have fallen through, and yet these latter might be quoted as of Welwitsch. Many collectors, again, give ms. names to any plants they fancy look distinct, often in genera of which they know little; and in these cases surely the credit should belong to the author who discriminates between the good and bad species, and describes the former. There is also always a great uncertainty as to the extent a ms. name is intended to cover, and it is highly improbable, in a critical genus, that the author who publishes it will have the same view of the extent of a species as the original namer.

In the instance which raised the present discussion, if, instead of writing *Chara contraria*, Kuetz., Phyc. Germ., we had written *Chara contraria*, Braun in Kuetz. Phyc. Germ., it appears to us that it would have been a clear misstatement of fact, as Braun does not appear to have written in 'Phycologia Germanica,' and to attribute the description in that work to him would not be flattering. If it is the *Chara contraria*, Braun, it is certainly of Braun ms.; and if we accept ms. names at all, what right have we to draw a line between those which another author has chanced to take up and publish, and those which have been disregarded and the plants re-named?

The objection raised to the system of quotation we advocate, that it would involve the alteration of the generally accepted authorities of many species, we do not think worth consideration, as, if it is allowed that the plan is good for the future, we must not let temporary inconvenience stand in the way of permanent expediency; and after all, it would chiefly affect those who do not take the trouble to look up original descriptions, but content themselves with second-hand quotations. If Linnæus and his generation had considered that the inconvenience to them should outweigh a permanent good, we should not have had a binomial nomenclature.

It appears to us that the quotation, as the authority, of the first publisher of the name, with a description, does the least amount of injustice to the parties concerned and to the botanical world at large, and is the only standing ground, other than quoting the first discriminator of the species, under whatever genus he placed it, or by whatever name he called it.

Henry & James Groves.

The difficulty of deciding what names were published by Mr. Brown in the 'Hortus Kewensis' is to a very great extent removed by the republication, in the 'Miscellaneous Works of Robert Brown,' of all his contributions to that work. The 'Miscellaneous Works' were collected and edited by Mr. Brown's colleague, Mr. J. J. Bennett, who was of course well acquainted with the part Mr. Brown had taken in the 'Hortus Kewensis.'

Sprengel (1818) uses the name *Mathiola*, altering the spelling to *Matthiola*, and quoting it as 'R. Brown emend.'; A. P. DeCandolle (Syst. Nat. ii. 162, 1821), retaining the original spelling, attributes the genus to Brown, as every one has since done. The fact, therefore, of Mr. Brown's connection with the name is obvious enough; and it was fully recognised by his contemporaries. The work of the Aitons was confined to making a catalogue of the plants of Kew Gardens, the botanical portion of the 'Hortus Kewensis' being contributed by Solander to the first edition, and by Dryander and Brown to the second.

The omission of "the comma between the name and the authority," to which the Messrs. Groves take exception, is all but universal among continental authors. But it does not follow that "trinomial names composed of mixed languages" would result; for the name of the author, if written in full, would probably be Latinised, and in the genitive case, e.g., "*Bellis perennis Linnæi.*' I do not quite accept the Messrs. Groves' statement of my views in their first paragraph.

James Britten.

CONTRIBUTIONS TO THE FLORA OF CENTRAL MADAGASCAR.

By J. G. Baker, F.R.S.

(Continued from p. 70.)

Weinmannia trigyna, n. sp.—A shrub, with lenticellate brown terete branchlets, obscurely pilose only towards the tip. Leaves simple, shortly petioled, oblanceolate-oblong, obtuse, 3–4 in. long, $1\frac{1}{2}$ in. broad, inciso-crenate, cuneate at the base, subcoriaceous, green and glabrous on both surfaces. Racemes subspicate, shortly peduncled, 4–5 in. long; rachis pilose. Flowers on very short pedicels, which are articulated at the top; bracts minute, deltoid. Calyx pilose, 1-12th in. long; teeth deltoid, as long as the campanulate tube. Petals oblanceolate, half as long again as the calyx, ciliated. Stamens a little longer than the petals; filaments filiform; anthers subglobose. Carpels 3, densely pilose; styles 3, glabrous, falcate, as long as the ovaries.—River banks in the Tanala country, *Baron* 292! Anomalous in the genus by its constantly trimerous ovary.

Weinmannia Rutenbergii, Engler in Reliq. Rutenb. 16.—East Betsileo, near the forests, *Baron* 24! 208! A shrub, 6–8 feet high. Leaflets sometimes 7. Capsule oblong, $\frac{1}{6}$ in. long, densely tomentose, with two falcate styles 1-12th in. long. *W. Biviniana*, Tulasne (of which the name is misprinted *Riviniana* in Dr. Engler's monograph in Linnæa, xxxvi., p. 635), seems to me conspecific with *W. tinctoria*, Sm., and if so there is one endemic species in Mauritius and Bourbon, eight in Madagascar all endemic, and one in the Comero group.

Kitchingia miniata, Baker.—*Calanchoe miniata*, Hils. et Bojer; Tulasne in Ann. Sc. Nat. ser. 4, viii. 149.—A succulent perennial, 1–3 feet high, glabrous in all its parts, with erect simple slender terete stems, with the leaves crowded in decussate pairs near the base, above it distant and much reduced in size. Lower leaves oblong-spathulate, $1\frac{1}{2}$–2 in. long, crenate, sessile. Flowers in lax ample terminal panicles 6–9 in. broad, with arcuate cymose branches, often replaced by tufts of small fleshy leaves; pedicels cernuous, finally $\frac{1}{2}$ in. long. Flower-calyx lax, broadly campanulate, $\frac{1}{2}$ in. diam., $\frac{1}{4}$–$\frac{1}{3}$ in. long, with four deltoid-cuspidate segments as long as the tube. Corolla infundibuliform, bright red, $\frac{1}{4}$ in. long, constricted above the base, $\frac{1}{2}$ in. diam. at the throat of the tube; segments 4, deltoid, $\frac{1}{6}$–$\frac{1}{8}$ as long as the tube. Stamens 8, inserted in a single row low down in the corolla-tube; filaments filiform, $\frac{5}{8}$–$\frac{3}{4}$ in. long; anthers small, subglobose. Carpels 4, small, glabrous, ampullæform, narrowed into filiform styles $\frac{1}{2}$ in. long. Fruit calyx persistent, membranous, $\frac{1}{2}$ in. long. Fruit carpels $\frac{1}{3}$ in. long, tipped with their persistent slender filiform styles.—Central Madagascar, in stony soil and on walls and rocks, *Dr. Parker!* Rocks in Noman's-land, between Imerina and Betsileo, *Baron* 341! A very fine plant, nearly allied to the original

K. gracilipes. Native name, *Kotrokotrobato.* Used, according to Dr. Parker, by the natives as a vermifuge.

Kalanchoe synsepala, n. sp.—An erect succulent perennial, glabrous in all its parts. Lower leaves opposite, sessile, oblong-spathulate, $1\frac{1}{2}$ in. long, dentate in the upper half. Flowers in dense terminal corymbose cymes; pedicels $\frac{1}{4}$–$\frac{1}{6}$ in. long; bracts very minute, lanceolate or deltoid. Calyx campanulate, greenish, $\frac{1}{8}$ in. long and broad, with four deltoid cuspidate teeth. Corolla reddish, $\frac{1}{2}$ in. long; tube oblong, $\frac{1}{8}$ in. diam.; segments ovate cuspidate, spreading, a third as long as the tube. Stamens 8, inserted near the top of the corolla-tube; filaments very short, filiform; anthers minute, ovate. Fruit-carpels lanceolate, as long as the corolla-tube, narrowed gradually into the short persistent styles. Seeds minute, brown, clavate.—Central Madagascar, *Baron* 248! Not a good *Kalanchoe*, on account of its gamosepalous calyx, but a near ally of *K. eriophylla*, Hils. & Bojer; Tulasne in Ann. Sc. Nat. ser. 4, viii. 149, which = *Cotyledon pannosa*, Baker, in Journ. Linn. Soc. xviii. 269.

Kalanchoe orgyalis, n. sp.—An erect glabrous succulent perennial, with stems 6–7 feet long. Lower leaves oblong-spathulate, entire, 3–5 in. long. Flowers in dense corymbose cymes; bracts minute; pedicels as long or shorter than the flowers. Sepals 4, deltoid, glabrous, $\frac{1}{8}$ in. long, connate only at the very base. Corolla yellow, urceolate, $\frac{1}{3}$ in. long, with four spreading deltoid cuspidate segments not more than $\frac{1}{4}$ as long as the ovoid tube, which is $\frac{1}{3}$–$\frac{1}{4}$ in. diam. Stamens 8, inserted biseriately near the throat of the corolla-tube; filaments very short; anthers minute, ovate. Fruit-carpels 4, $\frac{1}{8}$ in. diam., as long as the corolla, narrowed gradually into the short styles.—West Betsileo, on stony ground and about woods, *Baron* 105! 249! Native name, *Hazombato.*

Kalanchoe tomentosa, n. sp.—A succulent perennial, densely coated throughout with short brown spreading hairs. Leaves not seen. Flowers in a narrow panicle about $\frac{1}{2}$ ft. long, with cymose branches, the upper close and many-flowered, the lower distant and few-flowered; bracts minute; pedicels shorter than the flowers. Sepals 4, deltoid, densely tomentose, $\frac{1}{8}$–$\frac{1}{6}$ in. long, connate at the very base only. Corolla $\frac{1}{2}$ in. long, densely tomentose like the rest of the plant, with an urceolate tube $\frac{1}{4}$–$\frac{1}{3}$ in. diam., contracted at the throat, and four small permanently erect lanceolate-deltoid segments. Stamens 8, subuniseriate, inserted above the middle of the corolla-tube; filaments filiform, about a line long; anthers minute, ovate, yellow, placed on a level with the throat of the tube. Fruit-carpels $\frac{1}{4}$ in. long, connate, narrowed suddenly into the short styles.—Central Madagascar, *Baron* 247! This and the two former, along with *K. eriophylla*, form a group of species peculiar to Madagascar, connecting *Kalanchoe* and *Cotyledon.*

Homalium (*Nisa*) tetramerum, n. sp.—A tree, glabrous in all its parts, with subterete rugose pale brown branchlets. Leaves shortly petioled, oblong, subacute, entire, 3–4 in. long, cuneate at the base, firm in texture, green on both surfaces, minutely black-dotted; stipules small, geminate, deltoid, caducous. Flowers in pairs, in copious nearly sessile rather lax spikes as long as the leaves; rachis stout, strongly angled; bracts minute, coriaceous, deltoid, persistent. Calyx-tube subcylindrical, $\frac{1}{8}$ in. long; sepals 4, lanceolate, erect, coriaceous, persistent, about half as long as the tube. Petals 4, alternate with the sepals, three times as long, oblanceolate, obtuse, persistent and strongly veined. Stamens 4, inserted opposite the claw of the petals, nearly as long as the sepals, recurved. Styles 3, free and falcate only at the tip.—Central Madagascar, in the forests, called, like the *Erythroxylon*, *Hazomby* (iron wood), *Dr. Parker!* Falls under the genus *Nisa*, section *Rhodonisæ* of Tulasne, as defined in Ann. Sc. Nat. ser. 4, vol. viii. p. 70. Well marked by its spicate 4-merous flowers.

Dicoryphe buddleoides, n. sp.—A large shrub or small tree, with slender lenticellate branchlets, pilose only towards the tip. Leaves alternate, shortly petioled, 2–3 in. long, oblong, acute, entire, rigid in texture, green and glabrous on both surfaces when mature. Stipules linear, $\frac{1}{4}$–$\frac{1}{3}$ in. long. Flowers 4–6 together in congested terminal cymes; peduncle and small lanceolate bracts ferrugineo-tomentose. Calyx coriaceous, infundibuliform, $\frac{1}{3}$ in. long, plicate towards the base, ferrugineo-tomentose, the four teeth deltoid, the upper half falling away as the ovary matures. Petals 4, spreading, ligulate, bright red, $\frac{1}{3}$ in. long, inserted about the middle of the calyx-tube. Stamens 4, reaching to the top of the calyx; filaments flattened, twice as long as the oblong anthers. Ovary $\frac{1}{2}$-inferior, 2-celled; styles 2, simple, $\frac{1}{8}$ in. long. Fruit not seen.—Forests of East Betsileo, flowering from October to December, *Baron* 125! Easily distinguished from *D. stipulacea*, Thouars, tab. 7, by its small linear stipules.

Calopyxis eriantha, Tulasne.—Forests of Central Madagascar, *Dr. Parker!*

Eugenia (*Syzygium*) **cyclophylla**, n. sp.—A shrub, glabrous in all its parts, with slender terete pale brown branchlets. Petiole 1-12th in.; blade suborbicular, about $\frac{1}{2}$ in. diam., deltoid at the base, rigid in texture, green and glabrous on both sides, with rather distant fine main veins. Flowers in congested terminal cymes; pedicels as long as the calyx. Calyx campanulate, $\frac{1}{6}$ in. long and broad, coriaceous, glossy, dark brown, obscurely toothed. Petals orbicular, $\frac{1}{4}$ in. long. Stamens about 50, $\frac{1}{3}$–$\frac{1}{2}$ in. long, with minute subglobose yellow anthers. Style finally $\frac{1}{2}$ in. long.—Central Madagascar, *Baron* 219!

Eugenia (*Syzygium*) **tanalensis**, n. sp.—*E. cuspidata*, Bojer, inedit., non Berg.—A shrub, glabrous in all its parts, with slender terete branchlets. Petiole $\frac{1}{3}$–$\frac{1}{4}$ in. long; blade ovate, conspicuously cuspidate, 1–2 in. long, deltoid at the base, subrigid in texture, green on both surfaces, with fine close erecto-patent raised veins. Flowers in copious small deltoid panicles at the end of the branchlets, with cymose branches; pedicels as long as the calyx. Calyx 1 lin. long and broad in the flowering stage, obconic, coriaceous, glossy, brown-black, with minute deltoid teeth. Corolla very small, suborbicular, falling without expanding. Stamens

12–15, about 1-12th in. long. Style finally ⅛ in. long.—Forests of Tanala, *Baron* 295! Gathered before in Central Madagascar by Bojer. A near neighbour of the Mauritian *E. glomerata*, Lam.

EUGENIA (*Syzygium*) CONDENSATA, n. sp.—A shrub, glabrous in all its parts, with slender terete pale brown branchlets. Petiole ¼–¼ in.; blade oblong-lanceolate, acute, cuneate at the base, 1–1½ in. long, rigid in texture, green on both surfaces, with close prominent erecto-patent veins. Flowers in dense small sessile terminal panicles with cymose branches; pedicels 0. Calyx obconic, glabrous, coriaceous, brown-black, 1 lin. long and broad; teeth obscure. Corolla very small, suborbicular, falling without expanding. Stamens about 20, ⅛ in. long. Style as long as the stamens.—Central Madagascar, *Baron* 237! Also a near ally of *E. glomerata*, Lam. We have four allied species from Madagascar already, gathered by Bojer, Meller, and Gerrard.

Lagerstroemia madagascariensis, Baker.—Common in the Ibara country, flowering in July at the same time as *Woodfordia floribunda*, which is also plentiful, *Baron* 261!

VEPRECELLA SCHIZOCARPA, n. sp.—An erect nearly glabrous shrub, with only a little ferruginous pubescence on the young branchlets, entirely without bristly hairs. Leaves long-stalked; petiole 1–2 in. long; blade ovate or oblong, acute, obscurely cordate, 3–4 in. long, denticulate, thin in texture and green on both surfaces, 7-nerved, with distinct raised subparallel veins. Flowers in lax deltoid terminal panicles with cymose branches; flower-pedicels as long as the calyx; fruit-pedicels 2–3 times as long. Calyx campanulate, finally ¼–⅓ in. diam., ⅙ in. long, ferrugineo-pilose in an early stage, subentire at the margin, furnished with five distinct ribs. Petals obovate, reddish, ½ in. long. Stamens 10, as long as the petals; filaments rather flattened, equalling the anthers, the connective of which is prolonged into a distinct posterior spur at the base. Capsule separating into five corky valves, which are truncate at the apex, ⅛ in. broad, and the upper half of which protrudes from the persistent calyx.—In and near forests in the Betsileo country, *Baron* 84! This is the first time that the fruit of this genus, which is endemic in Madagascar, has been obtained. The anthers are just like those of the species figured by Naudin, Ann. Sc. Nat., series 3, xv. p. 313, tab. 15, figs. 7 and 8.

MODECCA DENSIFLORA, n. sp.—Stems stout, woody, terete, glabrous, with a simple tendril of firm texture circinate at the tip from every node, except those that bear the clusters of flowers. Leaves not seen. Flowers in dense heads on short woody lateral peduncles which do not end in a tendril, sessile in clusters on raised tubercles. Female flowers only seen, reddish, 1¼ in. long. Calyx-tube subcylindrical in the lower half, dilated in the upper half into a cup; sepals 5, lanceolate, cucullate at the tip. Petals 5, oblong, inserted at the throat of the calyx-tube, rather shorter than the calyx-segments and more delicate in texture, minutely fimbriated at the margin. Corona lining the campanulate part of the calyx-tube as five fleshy processes, and showing at its throat as a series of minute inflexed teeth. Staminodia 5, opposite the sepals, lanceolate, membranous, connate round the base of the ovary. Pistil about as long as the petals. Ovary oblong-cylindrical, narrowed into a short style, with a large capitate 3-lobed stigma.—In the open country, Betsileo land, near rocks and water, only one plant seen, *Kitching! Baron* 255! I am indebted to Dr. Masters for the determination of this curious new species.

Begonia (*Mezierea*) cladocarpa, n. sp.—A succulent undershrub, glabrous in all its parts. Leaves long-stalked; petiole reaching 5–6 in.; stipules large, lanceolate, deciduous; blade oblique cordate-deltoid, 5–6 in. long, and nearly as broad, thin in texture, palmately 5-lobed less than halfway down, obsurely denticulate. Flowers in the specimen all female, in sparse cymes from the axils of the leaves, which are not more than $\frac{1}{3}$–$\frac{1}{4}$ as long as the petiole; bracts deciduous; pedicels as long as the ovary. Ovary clavate-oblong, terete, $\frac{1}{2}$–$\frac{3}{4}$ in. long, tapering into the pedicel. Sepals 2, oblique obovate, pinkish, $\frac{1}{2}$ in. long. Styles $\frac{1}{3}$ as long as the sepals, each with a single fork reaching halfway down.—Damp places in the forests of Eastern Betsileo, *Baron* 9. A second species, in addition to *B. aptera*, Roxb., of the section *Aneupteron* of the genus *Mezierea*, as understood by A. DC. Prodr. xv. pt. 1, 407. Male flowers not yet seen.

Raphidiocystis brachypoda, n. sp.—A herbaceous climber, with a slender angled nearly glabrous stem, with a simple tendril, spiral from its base, from each node. Petiole very short; blade simple, cordate-ovate, acuminate, 3–4 in. long, thin in texture, obscurely lobed, with distant deltoid-cuspidate teeth and a few obscure setæ mostly on the edge. Female flowers 3–4 together in cymes sessile in the axils of the leaves; pedicels finally about $\frac{1}{2}$ in. long. Ovary oblong, above $\frac{1}{2}$ in. long, densely clothed with large bright brown pungent bristles; upper part of calyx-tube campanulate, $\frac{1}{6}$ in. broad and deep; teeth small, linear or lanceolate. Corolla infundibuliform, 1 in. long; segments lanceolate. Style with cylindrical stigmas reaching to the top of the corolla-tube. Male flowers unknown.—Forests of the Betsileo country, *Baron* 144! Habit and foliage of the Guinea *R. Mannii*, Hook. fil., with a very different inflorescence. Two species are known already, both Tropical African.

Trochomeria madagascariensis, n. sp.—A forest climber, with slender angled deeply sulcate branchlets and small simple tendrils. Petiole 2 in. long, wanting the foliaceous persistent stipules of *T. debilis* and *T. Garcini;* blade simple, cordato-ovate, acute, 2–3 in. long, nearly glabrous, turning black in drying, with a large rounded basal sinus and conspicuous deltoid-cuspidate spreading teeth, growing smaller gradually towards the tip of the leaf. Female flowers 1–3 together from the axils of the leaves on a common peduncle shorter than the petiole. Ovary oblong, glabrous, $\frac{1}{6}$ in. long, narrowed into a distinct neck below the campanulate summit of the calyx-tube, which is $\frac{1}{8}$ in. long and broad, with five minute distant teeth. Petals ovate, $\frac{1}{8}$ in. long, free to the base. Style columnar, with the large capitate stigma on a level with the tip of the petals. Male flowers not seen.—Forests of Central Madagascar, *Dr. Parker!* Adds this genus, of which three species are previously known in Tropical Africa, and four at the Cape, to the flora of the island.

Peucedanum capense, Sonder.—In the Noman's-land, between Imerina and Betsileo, *Baron* 340! A Cape species gathered already in Central Madagascar by the late Dr. Rutenberg.

Cussonia Bojeri, Seem.—Rocks in Noman's land, *Baron* 342! Gathered also by Dr. Parker, and long ago by Bojer. Native names, *Hazo-goaika* and *Tsingila*. These new specimens show clearly the normal 2-celled ovary of the genus, which Mr. Bentham, Gen. Plant. i. 945, expresses a doubt as to this species possessing.

(To be continued.)

NOTES ON THE FLORA OF CAITHNESS AND SUTHERLAND.

By Arthur Bennett, F.L.S.

The plants of these two counties are interesting beyond the mere fact of certain species occurring there, forming, as they do, the extreme north of mainland Scotland. Beyond a few species recorded in the 'Botanical Exchange Club Reports' and those of the 'Record Club,' I do not know of any published additions to these counties since Mr. H. C. Watson's 'Topographical Botany' appeared. For the additions to the Caithness Flora, I am indebted for a series of specimens, and notes on them, from Mr. James Grant, of Wick (who mentions Mr. D. Nicolson for many specimens and localities). For those of Sutherland, for a similar series from Mr. W. F. Miller, of this town. Mr. Miller spent but a short time in E. Sutherland, which is to be regretted, that vice-county having been much less searched than W. Sutherland. In the critical genera the *Hieracium* and *Salix*, we are much indebted to the kindness of Mr. J. Backhouse (through Mr. Mennell) and the Rev. J. E. Leefe for their determination. I have thought it best to place the two counties together, yet to separate the records for each. A * prefixed to the name implies it to be an addition to the county, so far as published records go. The † sign signifies, in the usual way, doubt of the nativity of the plant to which it is affixed. A few plants have the initials H. C. W.; these had been seen by the late Mr. H. C. Watson; but for whose regretted death these notes would have been much more valuable.

Caithness.—County 109.

Thalictrum majus, Auct.—Reay Links. Some slight doubt may attach to this plant, the fruit being too near *minus*, but the exposed and northern situation may have stunted the development of the fruit in late autumn.

Ranunculus trichophyllus, Chaix. (H. C. W.)—In two old quarries three miles from Wick.

R. heterophyllus, Fries.—Sibster, near Wick.

Sinapis arvensis, L.—Abundant.

**Nasturtium officinale*, Br.—Thurso river, near Halkirk.

**Barbarea vulgaris*, Br.—Common in both Wick and Thurso rivers, "in situations far from gardens."

†**Papaver dubium*, L.—Westerseat, in oat-field.

**Cardamine hirsuta*, L.—Yarrow Hills.

**C. flexuosa*, With.—Yarrow Hills.

**Viola tricolor*, L.—Plentiful.

**V. lutea*, Huds., var. *amœna*.—Shores of Loch Wester. Sandy links, near Ackerill Tower? this may be *V. Curtisii*, Forster.

**Raphanus Raphanistrum*, L.—Abundant.

Stellaria uliginosa, Murray.—Wick river.

**Lychnis diurna*, Sibth.—Plentiful on Wick and Thurso rivers.

**L. vespertina*, Sibth.—Once found near Wick.

**Stellaria media*, With., var. *neglecta*.—Potato-fields at Oldwick.

**Arenaria trinervia*, L.—Dunbeath Strath.

Sagina procumbens, L.—Ditch at Gersa. Watten.

Spergula arvensis, L. (*sativa*).—Common in corn-fields.

**Spergularia neglecta*, Syme.—Shaltiegoe and Wick river.

**Geranium sylvaticum*, L.—Abundant on Reisgill Burn, near Lybster. Forss Water.

Oxalis Acetosella, L.—Scouthall Wood. Watten, &c.

**Medicago lupulina*, L.—Fields and waysides.

†*Trifolium agrarium*, L.—Westerseat (alien).

**T. minus*, Relhan.—Thurso and Wick rivers.

†*T. hybridum*, L.—Westerseat (alien).

Lathyrus pratensis, L. — Common. Reay Links, among *Thalictrum*.

**Prunus spinosa*, L.—Four bushes of this on Acharole Burn (planted, ? A. B.).

**Spiræa Filipendula*, L.—Helman Head, very dwarf specimen.

Rubus cæsius, L.—Cliffs of Thurso river, fifteen miles from its mouth.

**R. Chamæmorus*, L.—Knockfinn Heights, near the Sutherlandshire border; also plentiful in Morven.

**Sedum Rhodiola*, DC.—Duncansby Head. Several cliffs near Wick.

†**Saxifraga hypnoides*, "L."—Burn at Bibbster. One plant near Wick. (Garden escape? A. B.).

† *Carum Carvi*, L.—Near "John O'Groats."

Galium verum, L.—Plentiful. Wick, &c.

**Viburnum Opulus*, L.—One tree between Lybster and Dunheath, by the roadside. (Planted? A. B.)

†**Anthemis arvensis*, L. (H. C. W.).—The Glebe, Wick.

†**Petasites vulgaris*, Desf.—Bilbster; also on Thurso river. "Probably a garden escape."

**Hieracium pallidum*, Fries.—Dunbeath Strath.

H. prenanthoides, Vill.—Wick river.

H. sylvaticum, Sm.—Yarrow Hills.

Pyrola media, Swartz. (H. C. W.).—Lybster Burn.

†**Veronica hederæfolia*, L.—"The Glebe," Wick.

†**V. Buxbaumii*, Ten. (H. C. W.).—"The Glebe," Wick.

**V. arvensis*, L.—Thrumster; Wick.

†**Mimulus luteus*, L.—Common on Wick and Thurso rivers and Reay Burn. "I doubt if this is a garden escape, as there is no garden within great distance, and the plant growing in dense masses," Mr. Grant.

**Rhinanthus Crista-galli*, L.—Wick river.

**Nepeta Glechoma*, Benth. (109) H. C. W. Top. Botany.—Banks of Thurso and Wick rivers. "I should say decidedly wild," Mr. Grant.

†**Lamium intermedium*, Fries.—The Glebe, Wick.

**Stachys ambigua*, Sm.—Occurs in two stations with *palustris* and *sylvatica*. Wick; Thrumster. Quite Dr. Boswell's Orkney plant, A. B.

**Teucrium Scorodonia*, L.—Fairly plentiful in a wood at Berriedale, now used by the Duke of Portland as a deer forest.

**Myosotis palustris*, With., var. *strigulosa*. (H. C. W.)—Wick river.

Trientalis europæa, L.—Duncansby Head.

**Polygonum lapathifolium*, L.—Westerseat. Wick.

**Atriplex angustifolia*, Sm.—Westerseat.

**A. Babingtonii*, Woods.—North Head, Wick Bay.

Salix ambigua, Ehrh.—Yarrow Hills.

**S.* ———*?*—Rev. J. E. Leefe remarks on a specimen from Scouthall, "Considerably like *S. ambigua*, but it is even more like *S. Finmarkica* (Willd.), Fr., which has the ovaries smooth like this. I have a remark from Koch himself, in which he states that *S. Finmarkica* is a variety of *S. repens*, and not of *S. ambigua*, as it is said to be in the Synopsis" (Fries Sum. Veg. Scan., p. 207). *S. Finmarkica*, Willd., is a plant of Lapland and Finmark, N. Germany?

**S. phylicifolia*, L. (form). Lybster.

S. aurita, L.—"A small form." Yarrow Hills.

S. aurita?—Knockfinn Heights. "Some of the buds indicate a resemblance to *aurita*, but I am doubtful," Rev. J. E. Leefe.

**Sparganium minimum*, Fries.—In several small lochs. Loch Calder, &c.

**Paris quadrifolia*, L.—"Only one station known." Watten. This extends its northern distribution from 96 Westerness, but it may be found in Orkney, occurring as it does in Iceland, Lapland, and Finmark.

**Scilla nutans*, Sm.—Dunbeath Water. Larrgwell.

**Potamogeton prælongus*, Wulf.—Yarrow, Watten, and Hemprigg's lochs; after a storm some of the specimens washed ashore measure six feet long.

**P. pectinatus*, L.—"109?" H. C. W. Top. Botany. Yarrow Hills.

**P. filiformis*, Nolte.—Thurso and Wick rivers, "and various lochs."

**P. polygonifolius*, Pourr.—On the moors in little Dhu lochs.

**P. natans*, L.—In Wick river, and elsewhere.

**P. crispus*, L.—Wick river.

P. heterophyllus, Schreb.—Thurso river.

P. rufescens,. Schrad.—Several stations. Robert Dick has recorded *P. plantagineus*, Du Croz, but Mr. Grant has sent no specimens.

[*Luzula Forsteri*, DC., "found by Robert Dick."—Unless specimens were seen this cannot be accepted.—A. B.]

**Juncus Gerardi*, Lois.—Sea-shore, near Wick. South Head.

**Eriophorum vaginatum*, L.—Knockfinn Heights.

**Carex flava*, L.—Wick river.

**C. pallescens*, L.—Watten.

C. aquatilis, Wahl., var. *Watsoni*, Syme.—Wick river, plentiful.

Agrostis vulgaris, With., var. *pumila*.—Shore of Loch Yarrow.

Calamagrostis stricta, Nutt.—"Loch Durau." Mr. Grant assures me there are several specimens of this plant in Robert Dick's herbarium at Thurso from Loch Durau, but the loch having been drained he was unable to send me specimens. It is mentioned by Dick as the "Lapland Rush." Those interested in the preservation of Robert Dick's herbarium will be glad to hear that it is now placed in cabinets, and will be carefully preserved.

**Festuca sciuroides*, Roth.—Dunbeath.

†**Lolium italicum*, Braun.—"Edges of hay-fields, &c."

**Bromus asper*, Murr.—Forss Water.

Aspidium aculeatum, Sw., var. *lobatum*. (H. C. W.).—Dunbeath Strath.

†*Scolopendrium vulgare*, Sm.—"Three plants in arch of a bridge five miles from Wick, not near any gardens. Probably sown by R. Dick." Still interesting to show it maintains itself in the county, A. B.

**Nitella opaca*, Ag.—Loch Yarehouse. Thurso river.

**Chara fœtida*, A. Br.—Yarrow lochs.

**C. fœtida*, A. Br., *longibracteata*.—Ditch at Sibster.

**C. fragilis*, Desv.—Yarrow loch.

SUTHERLANDSHIRE.—VICE-COUNTIES 107 (EAST), AND 108 (WEST.)

**Ranunculus bulbosus*, L.—W. Durness.

**Fumaria officinalis*, L.—E., Lairg.

**Cardamine hirsuta*, L.—E. Lairg.

**C. pratensis*, L.—E., Lairg.

**Capsella Bursa-pastoris*, Mœnch.—W., Durness ; Scourie.

**Raphanus Raphanistrum*, L.—E., Lairg.

**Viola arvensis*, Murr.—E., Lairg.

**Arenaria serpyllifolia*, L.—E., Lairg.

**Trifolium minus*, Relhan.—W., Badcaul.

**Anthyllis Vulneraria*, L.—E., Lairg.

**Vicia sepium*, L.—E., Lairg.

**Lathyrus pratensis*, L.—E., Lairg.

**Orobus tuberosus*, L.—E., Lairg.

**Orobus tuberosus* var. *tenuifolius*, Roth.—E., Lairg.

**Spiræa Ulmaria*, L.—E., Lairg.

**Comarum palustre*, L.—E., Lairg.

**Callitriche platycarpa*, Kuetz.—W., Durness; Scourie.

**Sedum anglicum*, Huds.—W., Rocks and cliffs by the sea; Scourie, &c.

**Ligusticum scoticum*, L.—W., Scourie.

**Bunium flexuosum*, With.—Lairg.

†**Sambucus nigra*, L.—E., near houses. W., near houses.

**Sherardia arvensis*, L.—W., Scourie.

**Valeriana officinalis*, L.—W., Durness.

**Carduus palustris*, L.—W., Durness; Scourie.

**Crepis paludosa*, Mœnch.—E.,Lairg. ? W. or E. in Top. Botany.

**Hieracium pallidum*, Fries.—W., Scourie; queried in Top. Botany.

**H. argenteum*, Fries.—W., Scourie.

**H. vulgatum*, Fries.—E., Lairg.

**H. murorum*, L.—E., Lairg.

**H. rigidum*, Fries.—E., Lairg.

†**Fraxinus excelsior*, L.—E., Lairg.

**Myosotis arvensis*, Hoffm.—E., Lairg.

**M. versicolor*, Reich.—E., Lairg. W., Durness; Scourie.

**Digitalis purpurea*, L.—E., Lairg.

**Veronica serpyllifolia*, L.—E., Lairg.

**V. officinalis*, L.—E., Lairg.

**Rhinanthus Crista-galli*, L.—E., Lairg.

**Melampyrum pratense*, L.—E., Lairg.

**Galeopsis Tetrahit*, L.—E., Lairg.

**Lamium intermedium*, Fries.—W., Durness; Scourie.

Ajuga pyramidalis, L.—W., Durness; Scourie.

†**Polygonum Persicaria*, L.—W., Scourie.

**Urtica urens*, L.—W., Durness; Scourie.

**U. dioica*, L.—E., Lairg.

**Salix cinerea*, L.—E., Lairg.

**Orchis mascula*, L.—W., Durness.

**O. latifolia*, L.—W., Durness; Scourie.

**Habenaria albida*, Rich.—E., Lairg.

**Triglochin palustre*, L.—E., Lairg.

**Potamogeton filiformis*, Nolte.—W., Durness.

**P. heterophyllus*, Schreb.—W., Scourie.

**Scilla nutans*, Sm.—W., Badcaul.

**Juncus Gerardi*, Lois.—W., Scourie.

**Carex muricata*, L.*—W., Scourie.

**C. præcox*, Jacq.—W., Scourie.

**C. glauca*, Scop.—W., Far-out-Head; Durness; Scourie, &c.

C. limosa, L.—W., Badcaul Moss.

With regard to *Carex limosa*, Mr. H. C. Watson writes:—"Much doubt attaches to the more northerly habitat of Sutherland. Prof. Graham, along with Mr. W. A. Stables and Mr. W. H. Campbell, pronounce the plant of Sutherland to be *C. rariflora*; but my specimens from that county, gathered by Dr. G. Macnab and the three other botanists mentioned, appear to be nearer *C. limosa*. Dr. Graham wrote thus in 1833:—"*Carex rariflora.*

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* Extends the north distribution of this *Carex* from 100 (Clyde Isles).

Observed near Oikel by Mr. Macnab. I afterwards found it by the road opposite the west side of Ben Hope; and Mr. Tyacke found it at the base of Ben Loyal. In 1825 Mr. Holme and I found it in Batcall [Badcaul] Moss, between Reconick and Oldshore. I then considered it _C. limosa_, and I am still inclined to agree with those botanists who can see no good specific distinctions between _C. rariflora_, _C. limosa_, and _C. irrigua_," Cyb. Brit. iii. 129. Dr. Boswell, not having seen specimens, suggested (Eng. Bot. 3rd ed., x., 122), that possibly the plant might be _C. stygia_, Fr. Mr. Miller collected good specimens, and, on comparing them with Fries' description (Nov. Flor. Suec. Mant. 3, p. 141), of _stygia_ I found they could not be that species, and could only make _limosa_ of them. I sent a specimen to Dr. Boswell, and his reply was—"The Badcaul species is certainly only _limosa;_ how it came to be called _rariflora_ I cannot imagine."

*_Alopecurus geniculatus_, L.—W., Scourie.

*_Avena elatior_, L.—W., Durness.

*_Festuca duriuscula_, "Linn.," Sm.—W., Durness.

*_F. rubra_, L.—W., Far-out-Head, Durness.

*_Asplenium marinum_, L.—W., Scourie.

*_Nephrodium dilatatum_, Desv.—W., Durness.

*_Botrychium Lunaria_, Sw.—W., Durness; moorland near Smoo Cave, Durness.

*_Lycopodium clavatum_, L.—W., Durness.

*_Chara hispida_, L.—W., Durness.

*_C. aspera_.—W., Durness.

*_C. fragilis_, Desv.—W., Durness.

*_C. fragilis_, Desv., approaching var. _capillacea_.—W., Durness.

In the above list, E. before a locality signifies East Sutherland; W., West Sutherland.

The following species were gathered by Mr. Grant on the Helmsdale river, between Kinbrace and Kildonan, in East Sutherland, being additional species for that vice-county:—

Trollius europæus, L.
Hypericum perforatum, L.
Prunus Padus, L.
Fragaria vesca, L.
Rubus Chamæmorus, L.
Asperula odorata, L.
Gnaphalium uliginosum, L.
Menyanthes trifoliata, L.
Ajuga reptans, L.
A. pyramidalis, L.
Lysimachia nemorum, L.
Trientalis europæa, L.
Scilla nutans, Sm.
Juncus squarrosus, L.
Luzula pilosa, Willd.
Scirpus palustris, L.
S. cæspitosus, L.
Eriophorum vaginatum, L.
Carex pulicaris, L.
C. ovalis, Good.
C. stellulata, Good.
C. vulgaris, Fries.
C. pilulifera, L.
C. binervis, Sm.
Anthoxanthum odoratum, L.

MONMOUTHSHIRE CRYPTOGAMS.

By the Rev. H. P. Reader, B.A.

The following notes on the Cryptogamic Flora of the neighbourhood of Usk, Monmouthshire (species of universal distribution being omitted), were made during a short visit there towards the end of January last. Amongst Mosses I observed:—

Phascum nitidum, Hedw.—On moist earth, sparingly.

P. subulatum, L.—Frequent on dry banks.

Weissia cirrhata, Hedw.—Not plentiful.

Tortula rigida, Schultz.—On wall tops, sparingly.

T. fallax, Hedw.—In one locality, abundant.

Cinclidotus fontinaloides, P. Beauv.—On stones, often submerged, in the river Usk.

Schistidium apocarpum, Br. & Schimp., var. *rivulare*.—In similar situations with the preceding.

Pogonatum nanum, Brid.—On shady banks.

Polytrichum juniperinum, Hedw.—On wall tops.

Aulacomnion palustre, Schw.—Plentiful in a swamp near Clytha.

Mnium cuspidatum, Hedw.—Shady banks.

M. punctatum, Hedw.—Wet places near Clytha (in fruit).

Fissidens bryoides, Hedw.—Abundant at the roots of trees.

Anomodon viticulosus, Hook. & Tayl.—On walls.

Hypnum velutinum, Dill.—One of the commonest Hypna.

H. striatum, Hedw.—Fine fruiting specimens in woods by the Usk.

H. speciosum, Brid.—On wet rocks at Clytha.

H. alopecurum, Dill.—Large and abundant, but no fertile plants observed.

H. cordifolium, Swartz.—In a swamp with *Aulacomnion*.

Amongst *Jungermanniaceæ*, none were more plentiful than *J. asplenioides*, Hook.—very fine and characteristic of the Flora. I saw no traces of fruit, which, indeed, I have only found (and that very rarely) in woods on the Cotteswolds.

J. platyphylla, Hook.—The dark green layers formed by this species are most remarkable on the walls of Raglan Castle.

The *Ricciaceæ* were represented by *R. glauca* and *R. fluitans*. The former I met with abundantly in turnip-fields on heavy soil, also on hedge-banks: the latter on the surface of a pool near Clytha.

Ramalina farinacea, L.—This common lichen, which rarely occurs in fruit, I found in that condition at Raglan.

Lecidea rubella, Ehrh.—On old elms, not infrequent.

Graphis scripta, Ach., and *G. elegans*, Sm.—I collected very handsome forms of these two species.

A CONTRIBUTION TOWARDS A FLORA OF THE TEIGN BASIN, S. DEVON.

By the Rev. W. Moyle Rogers, M.A., F.L.S.

(Continued from p. 76.)

Lotus tenuis, Kit.—Ashton, along border of stony field. At Oaklands, Chudleigh, in similar situation. By old clay-pits near Kingsteignton. Very local, but in good quantity in these three stations.

L. angustissimus, L.—Ashton, Trusham, and Hennock; frequent in stony places and on bare downs. As I have not been to the stations given in Fl. Dev. (near Kingsteignton and Bishopsteignton) for *L. diffusus*, I can give no opinion as to which of the segregates, *angustissimus* or *hispidus*, is there intended. There appears to be no specimen of either in the Jones Herbarium. But Mr. Jordan (in Phyt. i. 293) reports finding "*L. angustissimus*" ("only three specimens") near Teignmouth in 1842.

Ornithopus perpusillus, L.—Frequent through a great part of the district, from Fingle Bridge to Chudleigh.

Vicia tetrasperma, Mœnch.—Very common in the lower part of the valley, especially in Ashton, Trusham, and Chudleigh.

V. gracilis, Lois.—Chudleigh Rocks, July 18, 1879; some small patches flowering and fruiting very freely in broken rocky ground now shut against the public. The only place in the county where I have seen it.

Lathyrus Nissolia, L.—Trusham, among bushes in rocky ground above the river; only a few plants, in flower and ripe fruit, Sept. 16, 1877, but I see no reason to doubt its being native.

Orobus tuberosus, L.—Holly Street, Chagford; Ashton; Haldon; Hennock. Var. *tenuifolius* occurs with the type at Ashton and Hennock. Rather local.

Prunus insititia, L.—Frequent at Moreton, Trusham, and between Trusham and the top of Haldon; and probably elsewhere.

P. domestica, L.—Hedges, Throwleigh and Gidleigh, *Briggs;* well-established in several places in Trusham; Hennock, one tree in hedge near a cottage by the river. A denizen of course.

P. avium, L.—Observed only at Trusham.

P. Cerasus, L.—Hedges, Throwleigh and Gidleigh, *Briggs;* and in neighbourhood of Moreton, Christow, ond Hennock.

Agrimonia odorata, Miller.—Teign Valley, near Sandy Park, Chagford; and by road over Bovey Heathfield, near Stover Lodge, *Briggs*. Perhaps elsewhere also; but certainly rare.

Sanguisorba officinalis, L.—Holly Street, Chagford, in some quantity; Hennock (Fl. Dev.), scarce. Near the river in both stations.

Poterium Sanguisorba, L.—Christow and Canonteign Downs; Ashton; Trusham; Chudleigh (Fl. Dev.); especially abundant at "The Rocks." Rather local.

Alchemilla vulgaris, L.—Near Fernworthy, on Dartmoor, *Briggs*. Apparently only on or near the moor.

Potentilla procumbens, Sibth.—Manaton; Ashton; Trusham; Chudleigh. Usually on roadside banks, very variable in character.

P. argentea, L.—Near Moreton, on the top of a hill about two miles north of the town, several plants. Christow; on Christow and Canonteign Downs, in considerable quantity at intervals; and on rocky banks in the Teign Valley. Trusham; rather common in rocky places. Near Newton Abbot, between the town and Wolborough Church, here and there along the common. Not recorded from Devon until discovered by me at Trusham in 1876; but it seems not unlikely that the authors of Fl. Dev. mistook this species for *P. verna*, which they report from "Rora and Pen Woods, near Ilsington, frequent."

Rubus Idæus, L.—Gidleigh, *Briggs;* near Chagford (Rav. Fl.), at Holly Street; by Tingle and Dunsford Bridges; Trusham, by the river and elsewhere, but uncommon; on Haldon, especially abundant towards the top; near Moreton; and near North Bovey (Fl. Dev.); rather common. Native, I am inclined to think, in most of these stations.

R. suberectus, Anders.—By the river at Hollow Street, and near Dunsford Bridge; Doddiscombsleigh,* in a wooded hollow just below Haldon, *Briggs;* wooded place a little below Beetor Bridge, on the Bovey, *Briggs*.

R. fissus, Lindl.—Near Chagford, *Briggs;* near Moreton, under "the Hill," in considerable quantity; by the Bovey, not far from North Bovey. Akin to this is a bramble, which occurs on Black Lea Down, Trusham (among furze bushes), which Mr. Briggs considers to be *R. opacus*, Föcke.

R. plicatus, W. & N.—Near Fingle Bridge, among bracken; by the Teign, near "Teign House," *Briggs;* near Moreton, with *R. fissus*, but in much smaller quantity.

R. hemistemon, Müll.—Prof. Babington so names a bramble which Mr. Briggs brought me from near Chagford; and he thinks that another which I sent him from Knighton Heath is "probably" the same, though the sepals are not quite satisfactory. The latter is very like the Black Lea *R. opacus*, Föcke. New record for the county.

R. affinis, W. & N.—Near Chagford; hillside above left bank of the Teign, immediately above Dunsford Bridge (probably b. *lentiginosus*), *Briggs;* Christow and Canonteign Downs; Ashton and Trusham, common; near Moreton, and by the Bovey at North Bovey, locally abundant; Heytor Down, *Briggs;* Knighton Heath, in considerable quantity, and rather variable. Of one very luxuriant form from this station, Prof. Babington writes:—"I think that this is a form of *affinis* very near to what I called *porphyraceus* (Föcke) for Mr. Groves and Mr. Townsend"; its place seems between *plicatus* and *affinis*. Certainly the most frequent of the *Suberecti* group, and usually the easiest to distinguish.

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* Erroneously written 'Doddiscombe Leigh' in the earlier part of this paper.

R. Lindleianus, Lees.—Holly Street, rather common: Sandy Park, Gidleigh, and elsewhere near Chagford, *Briggs;* Bridford, *Briggs;* Christow; Ashton and Trusham, frequent; Chudleigh; about Moreton and North Bovey, uncommon; Knighton Heath, common. Handsome and well marked. A bramble near this (the same as that referred to in Mr. Briggs's Fl. Plym., p. 112, as "allied to *Lindleianus*") occurs at Sandy Park, near Chagford, Gidleigh, Throwleigh, Morchington, *Briggs;* Holly Street, and thence down the Teign Valley to Chudleigh, very common; common about Moreton, North Bovey, Lustleigh, and Knighton Heath; Bridford, *Briggs;* Christow and Canonteign Downs. Indeed this form is certainly one of the most generally distributed and abundant brambles of the district. If it is ever accepted as a distinct species, its right place would seem to be between *Lindleianus* and *rhamnifolius.*

R. rhamnifolius, W. & N.—Generally distributed through the district, but often in rather small quantity.

R. imbricatus, Hort. Between Moreton and Doccombe, in one spot; by Dunsford Bridge; apparently absent from the immediate neighbourhood of Dartmoor, but becoming common in the Teign Valley below Dunsford Bridge to Kingsteignton, and below Lustleigh in the Bovey Valley to Teigngrace; very common in Trusham and the contiguous parishes, and up the western slope of Haldon. Beyond the district, I have seen it between Haldon and Exeter, and north-east of Exeter (in one place) towards Stoke Canon. Farther east in the county I have not yet looked for it.

R. ramosus, Blox.—Near Moreton, in one place only (about a mile to the north of the town), and there in small quantity; near Teign House, *Briggs;* Ashton and Trusham, occasionally; in one place between Bovey Tracey and Moreton, *Briggs*: Lustleigh; Bovey Tracey; Knighton Heath; Teigngrace; in considerable quantity on Black Lea Down, Trusham; but rather scarce elsewhere. With the sincerest wish to avoid the folly of assigning specific rank to any variety, I cannot bring myself to accept this bramble as a variety of *imbricatus*, or of any other species yet described as British.

R. discolor, W. & N.—Generally distributed, and usually very abundant.

R. leucostachys, Sm.—Nearly as general as the last, and often quite as abundant.—b. *vestitus.*—Frequent about Moreton and North Bovey.

R. Salteri, Bab., b. *calvatus.*—Knighton Heath, *Briggs.* I have also found what appears to be this at Holly Street, and in one place in Ashton.

R. villicaulis, W. & N.—Holly Street; Ashton and Trusham, but I think uncommon; Christow and Canonteign Downs, abundant; roads between Moreton and North Bovey, and between Moreton and Lustleigh; common between Bovey Tracey and Heytor, *Briggs.* On Canonteign Down Mr. Briggs pointed out to me the form referred to in his Fl. Plym., p. 118, as in his opinion identical with specimens of *R. sylvaticus*, W. & N., sent him by Dr.

Föcke; and we afterwards saw a good deal of it in that neighbourhood. Mr. Briggs has also found this at Lustleigh, and about Bovey Tracey.

R. adscitus, Genev.—Holly Street; near Dunsford, *Briggs;* Trusham; between Chudleigh and the top of Haldon, in great quantity; near Moreton and Lustleigh; by the Bovey Stream, between Bovey Tracey and Heytor, and about Ilsington, *Briggs;* Christow and Canonteign Downs, very common; Teigngrace, *Briggs.* On the border of Canonteign Down, just above Nitton Cleave, occurs in some quantity (among furze) a small bramble which appears intermediate between *villicaulis* and *adscitus.*

R. macrophyllus, Weihe, a. *umbrosus.*—Near Caistor Rock and elsewhere on and about Dartmoor, in the neighbourhood of Chagford, Gidleigh, Fernworthy, *Briggs;* common by the river at Holly Street; near Fingle Bridge; and near Dunsford Bridge; Christow; Ashton; about Chudleigh, and thence to the top of Haldon; common about Moreton and North Bovey, and on Christow and Canonteign Downs; common about Ilsington and below Heytor, *Briggs.* One of our most abundant brambles, especially in the more exposed parts of the district.

R. Borreri, Salter.—Haldon; border of wood between racecourse and the "Belvidere"; not typical. The plant for which Mr. Briggs suggests the varietal name *dentatifolius* (Fl. Plym., p. 121) has been found by him at Gidleigh, and near Heytor; by both of us near Fingle Bridge, on Christow Down, and in Nitton Cleave; and also by me at Holly Street in considerable quantity.

R. Hystrix, Weihe?—Border of heath not far from Stover Lodge, *Briggs.*

R. scaber, Weihe?—Knighton Heath, *Briggs.*

R. Radula, Weihe.—Between Gidleigh and Chagford, Fernworthy, Fingle Bridge, Bovey Valley, *Briggs.* Rather common throughout the district from above Chagford to Knighton Heath and Kingsteignton.

R. emersistylus, Müll.—Prof. Babington so names (not altogether without hesitation apparently) a bramble which occurs in some quantity in roadside ditches and thickets between Chudleigh and the top of Haldon. It appears, however, to differ considerably from both the forms *R. Bagnallii*, Blox., and *R. Briggsii*, Blox.

R. diversifolius, Lindl.—Rather common in the Teign Valley proper, from Holly Street to Newton Abbot; and about Moreton.

R. Lejeunii, Weihe.—Canonteign Down; a little thicket of it in one spot.

R. pyramidalis, Bab.—In garden hedge at Morchington, *Briggs;* by the river a little above Holly Street, in great quantity; between Chagford and Fingle Bridge, *Briggs;* Moreton and Lustleigh Road, frequent; but not within about two miles of Moreton; between Lustleigh and the Cleave, between Lustleigh and Bovey Tracey, and between Bovey Tracey and Heytor, *Briggs;* Knighton Heath. Very constant in character.

(To be continued.)

Abstract.

ON THE LIFE-HISTORY OF A CROCUS AND THE CLASSIFICATION AND GEOGRAPHICAL DISTRIBUTION OF THE GENUS.

By G. Maw, F.L.S.

(Concluded from p. 90.)

In attempting a natural grouping of the species, a difficulty presents itself in the large number of well-marked characters which, as it were, interlace and overlap; community of character of one organ bringing together a different set of species to those that would be associated by the common characters of another organ. The author referred to Haworth's first attempt at classification, by the presence or absence of a bearded throat, to Dean Herbert's classification, by the spathes and corm-tunics, and to Baker's more recent system, based on the structure of the stigmata, and insisted on the necessity of viewing the whole of the characters in common before anything like a natural system of arrangement could be arrived at. Dean Herbert's system, with some slight modification, was preferred by the author, who groups the species as follows:—

Division I.—Involucrati.

Species with a basal spathe springing at the base of the scape from the summit of the corm.

Section I. *Fibro-membranacei*—with a corm-tunic of membranous tissue interspersed with nearly parallel fibres.

Autumn Flowering.

1. iridiflorus
2. vallicola
3. Scharojani
4. zonatus.
5. karduchorum
6. nudiflorus
6*b*. granatensis
7. asturicus
8. serotinus
9. Salzmannii
10. Clusii
11. ochroleucus
12. lazicus
13. Cambessedesii

Spring Flowering.

14. Imperati
15. suaveolens
16. versicolor
17. Biliottii
18. Malyi
19. minimus
(20. Boissieri?)

Section II. *Reticulati*—with a corm-tunic of distinctly reticulated fibres.

Spring Flowering.

21. corsicus
22. etruscus
23. montenegrinus
24. banaticus
25. Tommasinianus
26. vernus

Autumn Flowering.

27. medius
28. longiflorus
29. sativus and sub-species allied to sativus
30, hadriaticus

Division II.—NUDIFLORI.

Species without a basal spathe.

Section I. *Reticulati*—with a corm-tunic of distinctly reticulated fibres.

Autumn Flowering.

31. cancellatus.

Spring Flowering.

32. veluchensis
33. Sieberi
34. dalmaticus
35. reticulatus
36. susianus
37. stellaris
38. ancyrensis
39. gargaicus
40. Gaillardotii
41. carpetanus

Section II. *Fibro-membranacei.*

Spring Flowering: lilac or white.

42. nevadensis
43. hyemalis
43*b*. Foxii
(44. hermoneus ?)
45. alatavicus

Autumn Flowering; lilac or white.

46. caspius
47. Tourneforti
48. veneris
49. lævigatus
49*b*. Boryi

Spring Flowering: orange, except candidus, which is white.

50. vitellinus
51. Balansæ
52. Suterianus
53. Olivieri
54. candidus
55. aureus
56. Korolkowi

Section III. *Annulati*—basal tunic of corm separating into annuli.

Spring Flowering.

57. cyprius
58. aërius
59. biflorus
60. Crewei
61. tauri
62. chrysanthus
63. Danfordiæ

Autumn Flowering.

64. speciosus
65. pulchellus

Section IV. *Intertexti* (spring-flowering)—with a corm-tunic of stranded or platted fibres.

66. Fleischeri
67. parviflorus

The genus is confined to the Old World in the northern hemisphere, mainly between 9° west and 50° east longitude, and 31° north, and 48° north latitude. There are also in Central Asia *C. alatavicus* and *C. Korolkowi* far to the north-east of the general area of occurrence.

The area of distribution would roughly centre round the Mediterranean and Black Sea, though the genus does not form an essential feature of what is known as the Mediterranean Flora, many of the species ascending to high ranges of altitude. The district including Greece, the Greek Archipelago, and Asia Minor, must be looked upon as the metropolis of the genus.

Dividing this into sub-districts, the general distribution of species will be thus represented:—

A. In the West European district, including Portugal, Spain, the Balearic Islands, and France, excepting the Alps, there are ten species, of which seven are endemic.

B. In the North African district, including Marocco and Algeria, there are two species, which also occur in Spain.

If the North African and West European district are thrown together, the collective area includes ten species, all of which are endemic, excepting *C. vernus*, which occurs sparingly in the Pyrenees.

C. In the Swiss and French Alps there are three species, which also occur in Italy.

D. In Italy, as far east as Venice, Sicily, Malta, Sardinia, and Corsica, there occur eleven species, five of which are endemic.

If the Swiss and French Alps and the Italian district are taken collectively, of the eleven species seven are endemic.

E. The East European district east of the longitude of Venice, and as far east as the longitude of Odessa, including Dalmatia, the Danubian Principalities, the Carpathians, Greece, the Ionian Islands, the Greek Archipelago, and Crete and Turkey in Europe, possesses twenty-five species, thirteen of which are endemic.

F. Asia Minor, Cyprus, and Kurdestan possess thirty species, fifteen of which are endemic.

G. The Circassian and Caspian district, including Southern Russia east of the longitude of Odessa, the Crimea, Georgia, the district bordering the west coast of the Caspian and North Persia, possesses nine species, only two of which are endemic.

H. Syria and Palestine possess eight species, five of which are endemic.

I. In Central Asia there are two species, neither of which occur west of the Caspian.

The isolation of the species at the extreme eastern and western limits of the Crocus area was remarked on in comparison with the intermingling of species over wider areas within the centre of distribution; nearly the whole of the species occupy continuous areas, and there is no important case of repeated occurrence in isolated districts. It is quite the exception to find any well-marked natural groups limited to particular districts; as a rule there is a geographical intermingling of the species of the different groups. *C. biflorus*, in its distribution, has a wider range of longitude than any other species, extending for 30° from Tuscany into Georgia. The next in order of wide distribution is *Crocus sativus* and its allied forms, extending for 30° from the South of Italy to Kurdistan. The annulate Croci are oriental, *C. biflorus* being the only species of this division reaching as far west as Italy. The orange species all occur east of the Adriatic. The genus is remarkable for the wide ranging in altitude of the majority of species, those that are essentially alpine or lowland being comparatively few in number. The islands of the Mediterranean afford many conspicuous examples of the geographical isolation of individual species. The Balearic Islands, Corsica, Syra, and Cyprus, each have their special species, and there are also many cases of insular variations of species found on the adjacent mainlands.

The author also referred to many curious cases of subordinate secondary characters common to species geographically associated, and, in conclusion, referred to the tendency of nearly every part of a Crocus to morphosis; notably to the stigmatic appendage to the anther, to the conversion of the membranous spathes into proper leaves, and to the development of the perianth segments into stigmata, and spoke of Mons. Chappillier's experiments on an abnormal form of *C. sativus*, in which the segments are converted into an extra whorl of stigmata, or saffron.

ARTICLES IN JOURNALS.—MARCH.

Botanical Gazette.—M. S. Bebb, 'On *Salix Sitchensis.*'—W. G. Farlow, 'American Grape Mildew in Europe.'—A. Gray, '*Chrysogonum Virginianum* var. *dentatum.*'—G. Vasey, 'New Grasses' (*Poa pulchella*, *P. Bolanderi*, *Stipa Parishii*).

Botanische Zeitung.—F. v. Höhnel, 'Studies on the Anatomy and Physiology of Plants.'

Botanische Centralblatt.—F. Hildebrand, 'On the Stomata of *Polycolymna Stuarti*' (1 tab.)—Id., 'Malformation of the fruits of *Passiflora gracilis.*'—O. Sadebeck, 'Memoir of O. W. Sonder.'—C. Luerssen, 'Pteridological Notices.'

Bulletin of Torrey Bot. Club (Feb.)—N. L. Britton, 'On a hybrid Oak' (*Quercus nigra* × *Q. Phellos*) (3 plates).—E. L. Greene, 'New Californian *Compositæ*' (*Viguiera Parishii*, *Hemizonia Heermanni*, *H. Parryi*, *H. spicata*, *Chænactis santolinoides*, *Raillardella Pringlei*).—J. B. Ellis, 'New N. American Fungi.'—G. E. Davenport, 'Fern Notes.'

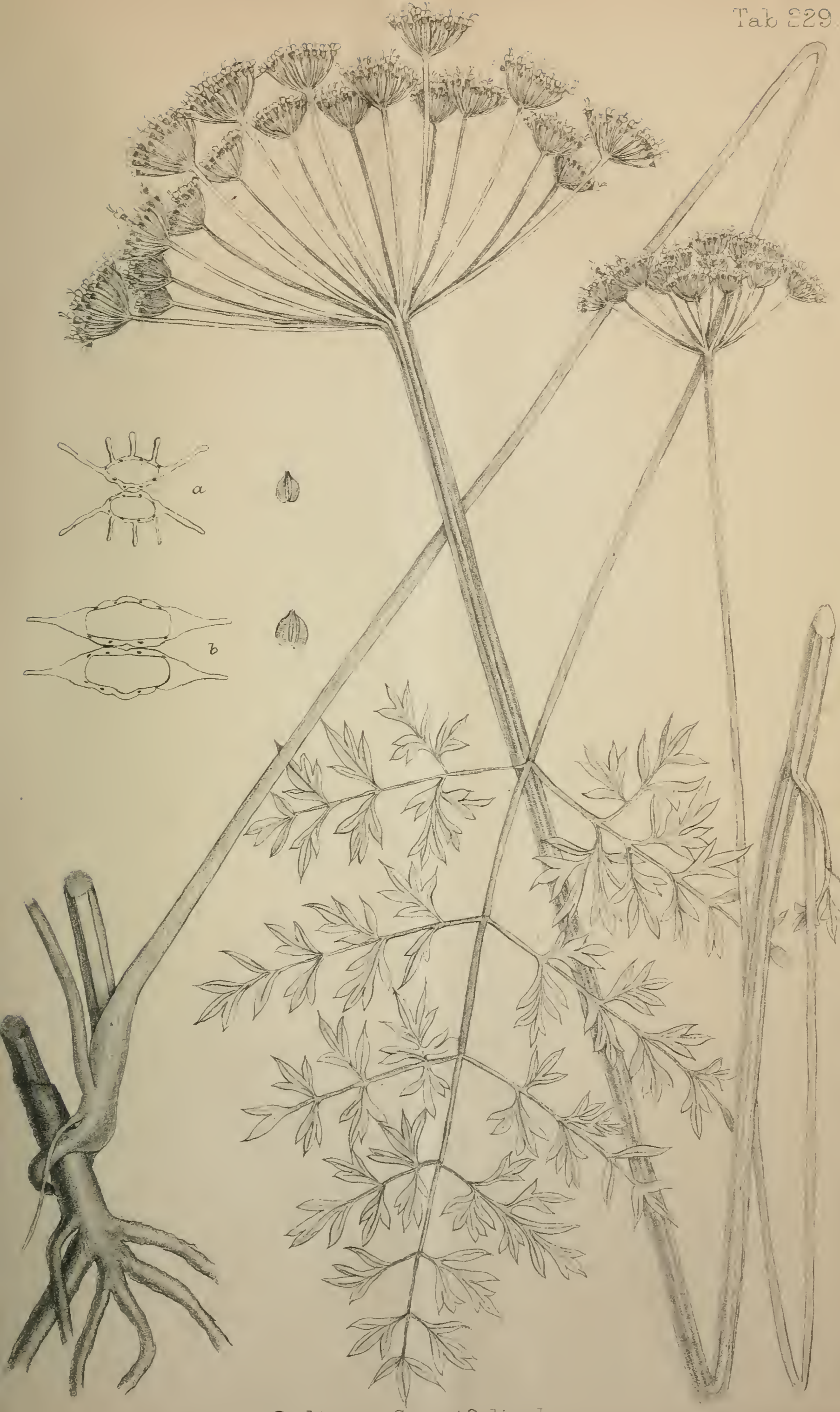
Flora.—C. Kraus, 'On the course of the Sap in Plants' (contd.) O. Böckeler, 'New *Cyperaceæ*' (contd.)—F. Kallen, 'On Protoplasm in the tissues of *Urtica urens.*'—W. P. Wilson, 'On the Respiration of Plants.'

Midland Naturalist.—J. E. Bagnall, 'Flora of Warwickshire' (contd.).

Naturalist.—T. Hick, 'On the designations of certain functions of plants' ('amylosynthesis' proposed for the formation of starch by 'assimilation').—W. West, 'Cryptogams of Baildon, Yorks.'

Œsterr. Bot. Zeitschrift.—F. Hofmann, 'On the Flora of Bosnia.'—S. Schulzer v. Muggenberg, 'Mycological Notes.'—P. G. Strobl, 'Flora of Etna' (contd.).

Tab 229.



Selinum Carvifolia, L.

Original Articles.

ON A NEW BRITISH UMBELLIFER.

By F. Arnold Lees, F.L.S.

(Tab. 229.)

Selinum Carvifolia, L., is the latest Lincolnshire discovery of my excellent friend the Rev. William Fowler of Liversedge Vicarage. For several seasons he has devoted his summer pleasure-trip to the investigation of the botany of his native county. After having year by year added to its flora such interesting plants and new county records as *Barbarea stricta*, *Cochlearia anglica*, *Stellaria glauca*, *Hypericum dubium*, *Vicia sylvatica*, *Spiræa Filipendula*, *Dipsacus pilosus*, *Melampyrum cristatum*, *Galeopsis ochroleuca*, *Euphorbia amygdaloides*, *Potamogeton heterophyllus* and *rufescens*, *Blysmus rufus*, *Carex filiformis*, *Melica nutans*, *Lastræa Thelypteris* and *Selaginella selaginoides*, most of them somewhat, and a few of them notably, extending their areas of distribution in Britain, it is to me peculiarly gratifying that his labours in a neglected district should at length have been rewarded by a discovery that in its botanical significance surpasses, whilst to some extent it also corroborates, the indications furnished by all the rest. The new Umbellifer in question was found growing, with *Silaus*, in July, 1880, and in July and September, 1881, on a wet bank by a pool near the south-eastern border of the extensive Broughton Woods, upon the eastern fringe of the Oolite stratum, some of the woodland being aboriginal, but most of it planted. When hardly in flower it was first gathered as *Peucedanum palustre*. The 1880 specimens were sent so labelled (without any doubt expressed or felt), for the General Locality Lists of the Bot. Record Club. Mr. Fowler having previously sent the true Milk Parsley from Laughton and from Sandtoft in the same division of the county, forwarded the Broughton Wood plant merely as from a somewhat unusual station. As having a bearing upon the question of mimicry, it should be noted that here we have a botanist, an old hand in the field, and familiar enough surely with the true *Peucedanum palustre*, for he had twice and recently gathered it, after having long looked out for it, gathering *Selinum* for *Peucedanum*—an error which, if there were no strong superficial resemblance, would argue at the least a not inconsiderable degree of critical obtuseness.

Although in general aspect *Selinum Carvifolia* so closely mimics *Peucedanum palustre* as to have been (according to Reichenbach) long confused with it on the Continent, it comes under a different tribe, that of *Angeliceæ*, with a fruit lens-like in section, made up of two much dorsally-compressed carpels, with non-contiguous lateral wings; whereas in *Peucedaneæ* the tumid lateral wings are so closely coherent, and parallel, as to appear one until they dehisce. Our British Milk Parsley was, however, included by Linneus in his genus *Selinum*, so that a generic as well as a specific description of the Lincolnshire plant is necessary.

SELINUM, Linn. (Hoffm.).—*Flowers* perfect, regular, calyx teeth obsolete. Petals equal, inversely cordate-oblong, narrowed from the base, involute, notched at the apex with the edges of the notch inflexed. Style filiform, capitellate, reflexed in fruit. Columella bipartite. *Cremocarp* compressed from back to back, all the ridges with membranous wings, the opposing marginal ones not parallel but gaping from being set back at an angle from the points of their attachment to the commissure. *Mericarps* five-winged, the three dorsal thin, parallel, approximate, the marginal twice as broad at the centre, narrowing to each end, and then approaching its fellow opposite. Vittæ solitary in the dorsal furrows, in pairs and superficial on the arched commissural face. *Umbel* compound, many rayed. General involucre none, partial bracts numerous, subulate, sub-persistent. *Leaves* bipinnate, with pinnatifid segments.

SELINUM CARVIFOLIA, Linn., Reich. Icones, vol. xxi., tab. 101, 1942. Syn. *Angelica Carvifolia*, Sprengel Umb. Prod., p. 16. *Seseli angulatum*, Lam. Fl. Fr. iv., 410. *Mylinum Carvifolia*, Gaudin Fl. Helv., ii., p. 344. *Laserpitium selinoides*, Scop. (?) Fl. Carn. vol. i., p. 198.—*Rootstock* oblique, from originating laterally out of that of the previous year's plant, with stout fusiform cylindrical fibres, *Stem* tough, solid throughout, erect, two to four feet in height, angular, furrowed, the many ribs so sharp and thin as to be almost winged on the main stem, which is glabrous and simple or branched. The ribs end just below the primary umbel (and the others in a lesser degree) in a ragged fringe of whitish processes, giving an appearance as of bracts having aborted or been pulled off. The occasional presence of a real bract tends to further deceive a cursory observer, and is in part, perhaps, an explanation why *Selinum* is liable to be confused with the *Peucedanum*. Radical and lower stem leaves with very long channelled petioles, upper ones with much shorter stalks, all with an abrupt sheathing base, tripinnate or bipinnate with pinnatifid segments, of a dull deep green, greyer beneath. Pinnules simple, or cut, segments lanceolate, quarter to one-third inch, with finely serrulate callous border, and a horny diaphanous mucro. *Umbels* terminal, large and compact, twenty to thirty rayed, flat-topped in flower, the primary rays converging in fruit and finely scabrid-pubescent. Pedicels of the umbellules one-third to half an inch, spreading, rather unequal, not thickening in fruit, and likewise pubescent. Petals milk-white. *Common involucre* generally obsolete, but rarely there is a subulate bract in the normal situation, or an aberrant one springing off a little way up one of the primary rays. Partial bracts, several to each umbellule, linear, sub-persistent. *Stamens* on curved filaments much longer than the petals. *Styles* slender, four times as long as the stylopode, persistent, curling down over the carpels. *Fruit* ovoid in outline, lenticular in section, about three-sixteenths of an inch in length by two-sixteenths in width, dull brownish green when ripe; each carpel when disarticulated seen to be slightly curved in the direction of its greatest diameter (most apparent when dry), the concavity towards the inner face, with its lateral wings bent back and contiguous to those of its fellow at base and summit only, producing the narrowly-elliptic gap between the double wing when viewed from the side. *Seed* when ripe showing through the pericarpal membrane on the commissural face as a blackish ellipse. Chewed when dry the fruit has a peculiar rank pungent taste, scarcely aromatic, but rather between that of juniper and pennyroyal. *Habitats* (on the Continent): moist shady thickets, damp grassy places on the borders of woods, and also in open marshy meadows. Perennial. Flowering in Lincolnshire from mid-July to mid-August, ripening its fruit early in September.

Upon the plate in Reichenbach's 'Icones' a monstrous tetrapterous mericarp is figured, the central dorsal wing being abortive, and a few examples of this occurred amongst the gatherings made by Mr. Fowler in September, 1881.

The European Distribution of *Selinum Carvifolia* is wide, with decided northern and north-western tendencies, thus in no way combatting the probability of its being indigenous in eastern England. Nyman, in 'Conspectus Floræ Europeæ, '(p. 283), gives its range as follows:—Southern Norway (rare), middle and south Sweden, Denmark, Holland, Belgium, Finland (south-west), Germany, the greater part of France (rare in the centre and south) inclusive of Dauphiny, Switzerland, North Italy, Poland, Austria (Hungary, Banatia, Transylvania), Sclavonia, Croatia, Montenegro, Servia, and mid to south Russia: indicated also in Arragon, but Lange's Spanish plant not known to Nyman.

From the foregoing description of *S. Carvifolia* it may seem to some that the assertion of a protective likeness to *Peucedanum palustre* is hardly warranted; and looking to the obvious and persistent involucre in which the Milk Parsley "rejoices" as Reichenbach* quaintly puts it, one wonders how the two ever came to be confused in the field. The fringe of diaphanous laciniæ should be a very insufficient source of blunder; and yet the coincidence of the discovery in England exemplifying the very risk of error Reichenbach alludes to is a circumstance too curious to be passed without notice; and in the identity of circumstance favouring the mistake, an identity very unlikely to be aught save natural, and which could scarcely be *intended* even on a theory that the plant was wilfully introduced, we may discern a fragment of collateral evidence in support of the indigenity of the *Selinum*. I am aware the unqualified admittance as "a native" into our British lists of a new plant—especially one not a mere critical "split" off some known species, but a member of a genus hitherto unknown in Britain—is, and should be, a matter calling for great caution; and, mindful of the late Mr. Watson's tenets on this point, I would rather err on the side of safety, and only claim for the *Selinum* the grade of a denizen for the present until other stations turn up, than add another to the botanical warnings of the past twenty years, of plants (undeserving of any title but that of alien) for a time encumbering our lists, and fostering false conclusions as the result of a rash or blind form of one-sided special pleading. About the indigenity of a *Carex frigida*, an *Agrostis nigra*, or a *Chara obtusa* there could be no question, but a new Umbel of a distinct type, so nearly allied to the northmen's "suspect" *Archangelica*, comes in quite another category, and I therefore feel it incumbent upon me to advance all that can fairly be urged in its favour.

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* He remarks (Icones, vol. xxi., p. 63), under *Thysselinum palustre*, "Nunc cum *Selino Carvifolia* confusum. Cf. supra." having previously, under *S. Carvifolia*, said (p. 51), "Nunc commutator cum *Peucedano palustri*, quod minus videtur necessarium, cum hoc gaudeat involucro generali.

Growing amongst wholly indigenous vegetation (of itself proving little), the *kind* of place in which it occurs is quite similar to its more usual habitats abroad (a point of much weight), especially those in South Sweden and Denmark, where it occurs seldomer in open meadows than farther south, and taken together these facts imply a good deal. There are not, nor have there been so far as I can learn, any "suspicious" species growing in the same woodland tract, unless *Myrrhis*, found long ago by Mr. Fowler (not seen lately), may be so considered, save *Barbarea stricta*, which, barge-brought doubtless, has spread up the canal-like River Ancholme (two miles to the east of the *Selinum* station), as far as Bishop Bridge. I am not aware if *Archangelica* has been found anywhere in Lincolnshire, but whether or not, unlike that, the *Selinum* is not a flower with a flavour at all likely to have ever recommended it as a pot-herb; nor has it (that I can discover) ever been in use in the cattle pharmacy of the rustic farrier, as was *Myrrhis* a century ago. The district is a secluded rural one, in a county as far from exhaustively worked (excepting Mr. Fowler's late investigations) as that of any other in England; and one, moreover, in which if anywhere (save perhaps Norfolk, Suffolk and Kent) we might expect species of the Danish or Germanic type to turn up. The site, too, on the banks of a lonely pool, is not a likely one for an outcast, but of such a nature one might almost say that *if* introduced it must have been the deliberate act of some human being. That persons do exist, calling themselves botanists, who wilfully sow seeds in the hope of adding to our flora new glories, there is no doubt; but the species in this case is a comparatively unknown one, seldom seen in botanic gardens, poorly represented in private herbaria, and of no particular beauty: so, unlikely to have been cast, as *Siler trilobum* by the Cherry Hinton chalkpit is suspected to have been by the Cambridge botanist-gardener. One not very improbable supposition has been made to me by the Rev. G. S. Streatfeild, of Louth. He asks:—"May this *Selinum* not have been introduced a thousand years ago, by the Danish fleets which threaded their way wherever they could in our Lincolnshire waters? I have always pleased myself with the idea that the Northmen brought *Angelica Archangelica* to the banks of the Thames." I am afraid the site, by a poolside where no Dane's boat could have got, negatives this, until other stations by navigable streams—the nearest is two miles to the east of the present site—are discovered. The plant is not one comparable with *Astrantia*, likely to have originated with the Romans, or else the fact of the *Selinum* growing but a few hundred yards east of the ancient Erminé Street (running in a straight line from Lincoln to Appleby) might be held significant. I myself am compelled by a consideration of the facts in all their bearings to come to a bolder conclusion—one that if wrong is wholly wrong. I believe it a true native in the strictest sense: an aboriginal occupier of the soil—a rélic of the time when, as we know, eastern England and Denmark and Holland were conterminous upon a plain where now a shallow sea rolls. I am led to this, most forcibly, by a study of the geographical dispersion of seven of our rarer Umbellifers (to say nothing of other orders), which goes to show how, in England, the range of eastern and western types meet and overlap. Indeed our island is rich comparatively in such "scattered" species, and we have several quite indisputably native ones *less* likely, judging from their range in Europe, to occur with us than the *Selinum*. Its distribution abroad gives, perhaps, the strongest support of all to its claim to inclusion as a *natural outlier*, established before the separation of our island from the mainland; in this, like other plants, needing no exceptional climatic condition to account for its prolonged vitality. If it is never found elsewhere in this country (although I believe it will be), and does not spread where it grows, it will not be without companions amongst undoubted natives. Finally, I regard the occurrence of *Selinum Carvifolia* in Broughton Woods as the opposite of unnatural, and altogether too much what might have been expected, if a botanist had (say) studied Nyman's 'Conspectus' with a view to gathering from its pages what *ought*, *cæteris paribus*, to grow in Britain, but was not known to do, for it to be refused a place in our native flora alongside the falcate *Bupleurum*, *Bulbocastanum*, *Libanotis*, &c.

The plate illustrating the foregoing description has been drawn wholly from Lincolnshire plants, in flower and fruit, furnished by the Rev. W. Fowler. The rays of the umbel are finely scabrid in the British examples, but Joseph Woods in 'Tourist's Flora' describes them as "smooth." A section of the fruit is given in fig. *a*; fig. *b* represents a section of the fruit of *Peucedanum palustre*.

A CONTRIBUTION TOWARDS A FLORA OF THE TEIGN BASIN, S. DEVON.

By the Rev. W. Moyle Rogers, F.L.S.

(Continued from p. 124.)

Rubus Güntheri, Weihe.—Christow and Canonteign Downs, and Nitton Cleave; in fairly good quantity at intervals.

R. glandulosus, Bell.—Gidleigh and Throwleigh, *Briggs;* by the river at Holly Street and Dunsford Bridge; in Trusham and contiguous parishes, common; rather frequent about Moreton, North Bovey, and Lustleigh. Usually the form *rotundifolius*, Blox., or near it.

R. corylifolius, Sm., a. *sublustris.*—Trusham, scarce; about Chudleigh, and towards Haldon, common; Knighton Heath; Newton Abbot, and between Newton and Teigngrace. Locally abundant, chiefly in stiff clayey soil.

R. althæifolius, Host.—Common at Trusham and in the contiguous parishes. New record for the county.

R. cæsius, L.—Trusham; Haldon; Newton Abbot. Very local.

Pyrus torminalis, Ehrh.—Ashton; Trusham; Hennock and Chudleigh. Rather frequent in hedges and borders of woods.

P. latifolia, Syme.—Hedge near Doddiscombsleigh, one tree (probably planted), *Briggs.*

P. Malus, L., a. *acerba.*—Moreton; Nitton Cleave; Ashton; Haldon Hill; Chudleigh. Rather frequent.—b. *mitis.*—Moreton; Ashton; Haldon Hill; Trusham; Chudleigh. Common.

Lythrum Salicaria, L.—Holly Street; Christow; by Bovey Stream, at Jews' Bridge; Newton Abbot. Unusually local.

Peplis Portula, L.—By Dunsford Bridge; Moreton; Hennock Reservoir; Bovey Heathfield (Fl. Dev.); Knighton Heath.

Epilobium angustifolium, L.—Near Lustleigh; a large number of plants together in bushy ground by railroad to Moreton. Seen only from railway carriage. Native?

E. montanum, L.—Mr. Briggs writes:—"This with white flowers, fading rose or pinkish, seems common about Chagford." I have seen the same slight variety occasionally at Trusham.

E. lanceolatum, S. & M.—On dry banks and walls in several places (and occasionally in considerable quantity) in the parishes of Christow, Hennock, Trusham, Chudleigh, Lustleigh, and Bovey Tracey; Ilsington, *Briggs.* As the distribution of this species is so imperfectly known, it may be well for me to mention here that beyond the district I have found it at Ashcombe (between Haldon and Dawlish) abundantly; also between the top of Haldon and Exeter, in several places; and in Exeter, in a lane between St. Michael's Church and Mount Pleasant. This last is, I believe, the most eastern station yet recorded in the county. It would be interesting to ascertain how much further in that direction its range extends. It seems absent from all the colder and more exposed parts.

E. tetragonum, L.—Bridford, *Briggs;* Ashton; Trusham; Chudleigh; between Newton Abbot and Bovey Heathfield, in plenty, *Briggs;* Teigngrace. Locally abundant.

E. obscurum, Schreb.—Holly Street; Chagford, *Briggs;* Moreton; Bridford, *Briggs;* Doddiscombsleigh; Trusham; Chudleigh; Teigngrace. Much more general than the last, but hardly very common in the district.

E. palustre, L.—Very abundant about Moreton, on Bovey Heathfield, and on Haldon (Fl. Dev.); Nitton Cleave; Trusham; Bovey Valley, between Beetor Bridge and Dartmoor, *Briggs;* Teigngrace. Uncommon rather than rare.

Myriophyllum spicatum, L. (aggregate).—Deep pool near the river between Chudleigh Bridge and Bellamarsh. Not seen in flower.

Callitriche obtusangula, Le Gal.—With the last near Chudleigh

Bridge; and also in a similar pool by the river between Ashton and Trusham.

Ribes rubrum, L.—Rather frequent along the little "Bramble Brook" which divides the parishes of Trusham and Chudleigh, and flows into the Teign by Crocombe Bridge; also in considerable quantity by the Teign below Farley Mill. I suppose only a denizen.

Sedum Telephium, L., a. *purpurascens*.—Christow and Hennock (Fl. Dev.); in several spots not far from the river. If only a denizen here (as on the whole I think most likely), it is thoroughly well established.

Saxifraga tridactylites, L.—Moreton; Christow; Hennock; Chudleigh Rocks; Ilsington, *Briggs*. Rather local.

Chrysosplenium oppositifolium, L.—Holly Street; Moreton; Dunsford; Christow; Ashton; Trusham; Chudleigh. Fairly common along the river, and on both sides of "Bramble Brook."

Apium graveolens, L.—By the river (here tidal) at Newton Abbot, and below.

Helosciadium inundatum, Koch.—Knighton Heath. Very rare (so far as I have seen) in S.W. England.

Petroselinum segetum, Koch.—Rather frequent in Ashton, Trusham, and Chudleigh (Fl. Dev.) parishes.

Sison Amomum, L.—Very abundant, though rather locally so, in Ashton, Hennock, and lower down the river.

Ægopodium Podagraria, L.—Near Moreton (Fl. Dev.); Ashton; Trusham; near Chudleigh Rocks. A denizen in all these stations, in my opinion.

Œnanthe pimpinelloides, L.—Frequent down the main valley from Christow to Newton Abbot.

Æ. Lachenalii, Gmel.—By the river at Newton Abbot.

Fœniculum vulgare, Gaert.—A well-established denizen by the river near Sparrow Bridge; at Trusham; and at Chudleigh Rocks (Fl. Dev.)

Silaus pratensis, Bess.—Ashton; Trusham; Chudleigh (Fl. Dev.); between Chudleigh and the top of Haldon, in great quantity. Locally abundant. Not observed by me in any station west of the Teign, nor recorded at all for Cornwall, for the neighbourhood of Plymouth, or for North Devon.

Torilis infesta, Spreng.—Ashton; Trusham; Chudleigh; Bovey Tracey. A colonist.

T. nodosa, Gaertn.—Trusham, in a few warm spots. Probably overlooked by me in similar situations elsewhere in the district; but certainly uncommon.

Chærophyllum Anthriscus, Lam.—Trusham; in great quantity at the north-west corner of Black Lea Down, in the hedges near it, and about the top of the "New Cut." A denizen well established and spreading.

C. sylvestre, L.—About the villages of Christow and Ashton; but looked for by me in vain throughout the parish of Trusham, and not observed elsewhere in the district.

C. temulum, L.—Generally distributed and abundant.

Conium maculatum, L.—Chagford, *Briggs;* Moreton; Ashton; Trusham; Chudleigh Rocks; Chudleigh Knighton. Only too frequent, though somewhat local.

Smyrnium Olusatrum, L.—Ashton; Trusham; Chudleigh Rocks (Fl. Dev.) Denizen. A troublesome weed where once it gets a footing.

Cornus sanguinea, L.—Trusham, Chudleigh, and elsewhere; but only locally abundant.

Adoxa Moschatellina, L.—Christow, Ashton, Trusham, Haldon, Chudleigh, and Lustleigh (Fl. Dev.). Especially abundant along the "Bramble Brook," and fairly frequent elsewhere.

Viburnum Opulus, L.—Holly Street (Stewart's Flora of Torquay); about Moreton and North Bovey (Fl. Dev.); Doddiscombsleigh; Ashton; Hennock; Chudleigh (Fl. Dev.) and Chudleigh Rocks; Trusham; Chudleigh Knighton. Fairly common.

V. Lantana, L.—Chudleigh (Fl. Dev.) and Chudleigh Rocks; and here and there between Chudleigh and Newton Abbot; near Bovey Tracey. Very local.

Rubia peregrina, L.—From Dunsford Bridge, down the main valley to Kingsteignton, and up the western slope of Haldon; in every parish, though only locally abundant; Nitton Cleave. Bovey Heathfield; between Bovey Tracey and Ilsington, *Briggs.*

Galium Cruciata, With.—Throwleigh, *Briggs;* frequent in Ashton, Hennock, Trusham, and Chudleigh; Ilsington, *Briggs.*

G. verum, L., b. *ochroleucum.*—Trusham; in patches for two or three yards of a hedge-bank at the top of the "New Cut," with typical *G. verum* and *G. mollugo* close by; summer, 1880 and 1881. Chudleigh Rocks, on the highest rock on the northern side of the glen; a much smaller form than at Trusham, and nearer to ordinary *G. verum*, which was abundant all around, while I searched in vain for *G. mollugo*, Sept. 1881.

G. palustre, L.—Common; the usual forms being *Witheringii* and *elongatum.*

G. uliginosum, L.—Ashton; in some boggy ground near "the Kiddons" cottages, with *Wahlenbergia hederacea*, *Scutellaria minor*, *Carex pallescens*, &c.; Haldon, in ditches and drains, frequent; Hennock, in wet ground to the south of Bottor, in great abundance, with *G. palustre;* Knighton Heath. Apparently a very local species in Devon and Cornwall; the value of the statement (for Devon) in Fl. Dev., "Swampy situations, frequent," being destroyed by the fact that the specimen labelled "*G. uliginosum*" (from Ilsington) in the Jones Herbarium is ordinary *G. palustre.* I have found it near Helston, in West Cornwall; but Mr. Briggs has looked for it in vain in East Cornwall and South-west Devon (*see* Fl. Plym., p. 184).

G. tricorne, With.—Ashton and Trusham. An occasional colonist in cultivated land.

Asperula odorata, L.—Woods by Dunsford Bridge; Doddiscombsleigh, Nitton Cleave, and Chudleigh (Fl. Dev.), at "the Rocks" and elsewhere.

(To be continued.)

CONTRIBUTIONS TO THE FLORA OF CENTRAL MADAGASCAR.

By J. G. Baker, F.R.S.

(Continued from p. 114.)

Cephalanthus spathelliferus, n. sp.—A very large tree, with subglabrous stoutish branchlets. Leaves in whorls of 4, shortly petioled, lanceolate, 5–6 in. long, 1–$1\frac{1}{4}$ in. broad, acute, coriaceous, green and glabrous on both surfaces; stipules small, deltoid, connate, deciduous. Flowers in globose heads above 1 in. diam., on erecto-patent axillary peduncles 2–3 in. long, enveloped in a young stage in a deciduous deltoid-cuspidate scariose brown bract; bracteoles silky, spoon-shaped at the tip, as long as the calyx. Calyx $\frac{1}{8}$ in. long, silky; tube angled by pressure; teeth 5, deltoid, erect. Corolla with a cylindrical tube $\frac{1}{6}$ in. long, and 5 oblanceolate-oblong patent segments as long as the tube. Stamens 5, nearly sessile at the throat of the corolla-tube. Style nearly twice as long as the corolla; stigma capitate. Fruit not seen.—Banks of rivers, West Betsileo, flowering in December and January, *Baron* 86!

Danais cernua, n. sp.—An erect shrub 8–10 ft. high, with terete glabrous branchlets. Leaves oblong, shortly petioled, acute, cuneate at the base, 2–3 in. long, 1–$1\frac{1}{3}$ in. broad, moderately firm in texture, green and glabrous on both surfaces, with fine immersed veining; stipules connate, deltoid, deciduous. Flowers in lax sessile or nearly sessile corymbs in the axils of the leaves, which are cernuous in an early stage; bracts minute, lanceolate, or deltoid; pedicels as long or longer than the calyx, glabrous. Calyx-tube globose, campanulate, $\frac{1}{2}$ lin. diam.; teeth lanceolate, as long as the tube. Corolla-tube $\frac{1}{3}$ in. long, funnel-shaped in the upper, cylindrical in the lower half, pilose inside at the throat; segments 5, oblong-lanceolate, $\frac{1}{8}$ in. long. Stamens sessile at the throat of the corolla-tube. Style exserted, with 2 subulate branches. Capsule globose, the size of a small pea, crustaceous, splitting in two valves down to the base.—Forests of the Tanala country, *Baron* 189! Gathered previously by Gerrard. A near ally of the Mauritian *D. fragrans*, Comm. We have three or four other undescribed species from Madagascar in the Kew herbarium.

Webera hispidula, n. sp.—A shrub or tree with slender drab glabrous branchlets. Leaves opposite, shortly petioled, oblong or obovate-oblong, $1\frac{1}{2}$–2 in, long, acute or subacute, deltoid at the base, turning black in drying, moderately firm in texture, shortly hispid on both surfaces, mainly on the arcuate principal ribs. Flowers in dense terminal compound corymbs; bracts minute, lanceolate, silky; pedicels 1–4 times as long as the calyx. Calyx 1 lin. long, pubescent; tube campanulate; teeth 5, deltoid. Corolla $\frac{1}{3}$ in. long, with a silky cylindrical tube and 5 contorted oblong segments $\frac{1}{3}$ as long as the tube. Anthers linear, as long as the corolla-lobes. Style exserted beyond the corolla-segments. Fruit not seen.—Forests of Western Betsileo, *Baron* 150! Gathered previously by Bojer in the province of Imerina.

MUSSÆNDA HYMENOPOGONOIDES, n. sp.—A shrub or tree, with brown obscurely hispid branchlets. Leaves opposite, shortly petioled, oblanceolate-oblong, acute, cuneate at the base, 3–4 in. long, moderately firm in texture, green on both surfaces, with a few minute adpressed bristly hairs, mainly on the veins beneath; side veins fine, arcuate; stipules minute, deciduous. Flowers in lax terminal corymbs; pedicels $\frac{1}{2}$–1 in., ascending, pilose; bracts linear. Calyx-tube infundibuliform, pilose, $\frac{1}{6}$ in. long; segments 5, linear, rigid, equal, persistent, finally an inch long. Corolla-tube nearly cylindrical, 18–21 lin. long, densely pilose externally and inside at the throat; segments 5, lanceolate, $\frac{1}{3}$ in. long. Anthers linear, $\frac{1}{6}$ in. long, sessile above the middle of the corolla-tube. Fruit hard, clavate-oblong, glabrescent, above $\frac{1}{2}$ in. long, indehiscent, coriaceous. — Forests of the Tanala country, *Baron* 313! Allied to the Mauritian *M. Landia*, Lam.

Nematostylis loranthoides, Hook. fil. — *N. anthophylla*, Baill.—*Psychotria anthophylla*, A. Rich.—Stipules minute, connate, deltoid-cuspidate, deciduous. Fruit as in *Alberta*, a small dry 2-celled capsule, with a single clavate seed filling up each of the two cells, crowned by the persistent calyx, 4 lobes of which are small and lanceolate, the fifth accrescent, oblong-lanceolate, scariose and conspicuously veined.—Central Madagascar, *Dr. Parker! Baron* 168!

ALBERTA ISOSEPALA, n. sp. — A shrub, with slender glabrous branchlets. Leaves lanceolate, shortly petioled, acute, cuneate at the base, moderately firm in texture, 3–4 in. long, green and glabrous on both surfaces, with fine ascending veins; stipules connate, deltoid, with a large crisp, persistent. Flowers in dense terminal corymbose panicles, mixed with reduced leaves, distinctly pedicellate. Calyx-tube small, obconic, pilose; limb of 5 subequal ovate veined, reddish membranous segments, $\frac{1}{3}$–$\frac{1}{2}$ in. long. Corolla-tube cylindrical, nearly glabrous, $\frac{3}{4}$ in. long, funnel-shaped and densely villose inside at the throat; segments 5, spreading, lanceolate, $\frac{1}{8}$ in. long. Stamens subsessile at the throat of the corolla-tube. Stigma reaching to the tip of the corolla segments. Fruit not seen.—Forests of West Betsileo, *Baron* 112!

TRICALYSIA CRYPTOCALYX, n. sp.—A shrub, with slender finely pilose branchlets. Leaves opposite, subsessile, lanceolate, entire, 2–3 in. long, acute, cuneate at the base, moderately firm in texture, green and glabrous on both surfaces, with fine ascending veins. Stipules connate, small, rigid, persistent, with a single cusp. Flowers 1–3, nearly sessile in the axils of the leaves, the calyx-tube of each quite hidden by an obconic cupular pilose persistent bracteole, 1–12th in. long and broad. Calyx-limb campanulate, pilose, $\frac{1}{2}$ lin. long, with 5 minute teeth. Corolla with a funnel-shaped tube twice as long as the calyx-limb, and 5 spreading lanceolate segments as long as the tube. Anthers 5, nearly sessile at the throat of the corolla-tube. Fruit not seen.—Forests of West Betsileo, *Baron* 159! A near ally of Schweinfurth's two Central African species, *T. djurensis* and *T. niamniamensis*.

Anthospermum emirnense, n. sp.—A dioicous under-shrub, with pubescent branchlets. Leaves in opposite pairs, with usually a tuft of others in their axils, so as to seem verticillate, oblanceolate, entire, subcoriaceous, $\frac{1}{2}$–$\frac{3}{4}$ in. long, connected at the base by the short pilose interpetiolar stipule, which has usually only a single short cusp. Flowers in copious whorls in the axis of the leaves, sessile. Male with a pinkish corolla 1–12th in. long, with 4 lanceolate teeth, which are longer than the cylindrical tube, and 4 stamens inserted at the throat of the tube, with filaments as long as the anthers. Female flower with a small obovoid ovary with scarcely any calyx-limb, a very small corolla with 3–4 erect lanceolate segments, and a pilose style $\frac{1}{6}$–$\frac{1}{4}$ in. long, with two long subulate arms.—Central Madagascar, *Dr. Parker!* Gathered previously by Bojer and Meller. Closely allied to *A. asperuloides*, Hook. fil., of the Cameroons, and *A. pachyrrhizum*, Hiern, of Abyssinia. We have four more Madagascar species, one of which appears to be quite identical with the well-known and widely-spread *A. æthiopicum* of the Cape.

Vernonia (Decaneurum) pectoralis, n. sp.—A shrub or small tree, with shortly pilose slender woody brown branchlets. Leaves alternate, shortly petioled, linear, 3–4 in. long, under $\frac{1}{2}$ in. broad, acuminate, entire, moderately firm in texture, green and thinly pilose on both surfaces. Heads very numerous, arranged in dense terminal corymbose panicles. Involucre campanulate, $\frac{1}{8}$ in. long and broad; bracts about 20, rigid, brownish black, orbicular, nearly naked on the surfaces, but minutely ciliated, the outer gradually smaller, all very obtuse. Flowers 10–12 in a head. Immature achene pilose. Pappus of 30–40 uniform whitish bristles, tinged with pink, above $\frac{1}{3}$ in. long.—Central Madagascar, *Dr. Parker!* A native cough-medicine. A near ally of *Decaneurum grande*, DC., Prod. v., 66.

Vernonia (Decaneurum) rhodolepis, n. sp.—A shrub or small tree, with branchlets clothed with dense short brown glandular hairs. Leaves alternate, sessile, oblanceolate, 2–3 in. long, acute, crenulate, subcoriaceous, shortly pubescent above, densely matted with yellowish brown hairs beneath. Heads in dense terminal corymbose panicles. Involucre campanulate, $\frac{1}{4}$ in. long, about 30 subrigid lanceolate-cuspidate 3–4 serial bracts, glanduloso-pilose and bright mauve-red in the exposed portions. Flowers bright red, about 20 in a head. Achene brownish, subterete, $\frac{1}{8}$ in. long, faintly hispidulous between the 8–10 distinct ribs. Pappus of about 30 pure white rigid uniform bristles nearly $\frac{1}{4}$ in. long.—Betsileo country, flowering in July, *Baron* 338!

Vernonia Merana, n. sp.—A tree, with woody branchlets clothed with thin pale brown tomentum. Leaves alternate, shortly petioled, oblanceolate, acute, entire, 4–5 in. long, 1–1$\frac{1}{2}$ in. broad, subcoriaceous, glabrous on the upper surface, clothed with thin pale brown tomentum beneath, copiously penninerved. Heads in deltoid axillary sessile panicles as long as the leaves, with laxly subspicate branches clothed with the same pale brown tomentum. Involucre campanulate, $\frac{1}{8}$ in. long; bracts about 20, very small, ovate or ovate-lanceolate, tomentose, the outer growing gradually smaller. Flowers about 20 in a head. Achene small, brown, glabrous, subterete (not seen mature). Pappus $\frac{1}{6}$ in. long, of about 20 uniform white bristles as long as the corolla-tube.—Forests of East Betsileo, *Baron* 225! Native name, *Merana*. Allied to *V. arborea*, Ham., of Tropical Asia.

(To be continued).

ON *RADULA CARRINGTONII*, JACK.

By W. H. PEARSON.

"*Radula Carringtonii*, nov. sp.—Dioica. Caule cæspitosa prostrato, subpinnatim ramoso; foliis imbricatis patentibus integerrimis, lobo superiore rotundato subreniforme, inferiori quadruplo minari, quadrato, adpresso. Perianthium . . . . Fusco-olivacea." —*Jack*, in Flora, p. 385, 1881.

Radula aquilegia, Tayl., var. *major;* Carrington in Trans. Bot. Soc. Edinb. vii. p. 455 (1863); Lindb. in Acta societatis scientiarum Fennicæ, x. p. 491 (1875). Hab. South of Ireland. Torc Woods; Cromaglown; Glena; Tomes Woods, Killarney, *Dr. Carrington*, June, 1861. Rocks near Torc Cascade, Killarney, the late *G. E. Hunt*, 1st and 3rd April, 1872 (male), sent by him to Gustav Limpricht, under the name *Radula complanata*. O'Sullivan's Cascade; Glena; Cromaglown, Killarney (female sterile), *Prof. S. O. Lindberg;* Killarney, *Dr. D. Moore.*

So far as our knowledge extends, this species has a very restricted distribution, no other localities than those of the South of Ireland being recorded. It is quite unknown on the Continent, and so far no American or other foreign specimens have been met with. During the past two years, since my attention has been directed to it, I have diligently, though vainly, searched for it in the neighbourhood of Dolgelly, in Wales, where *Radula aquilegia* and other rare species which were supposed to be peculiar to the South of Ireland are found.

Superior lobe 1·2 mm. broad × ·9 mm. high 1·1 × ·8 1·1+8 ·1 × ·7 ·9 × ·7. Lobule ·6 mm. broad × ·4 mm. high ·5 × ·4 ·5 × ·35 ·5 × ·3, superior lobe of the branches ·9 mm. broad × ·75 mm. high ·85 × ·7, lobule of the branches ·45 mm. broad × ·4 mm. high ·4+·35 ·4+·3. Male ramuli 2 to 3 mm. long, with the leaves ·7 mm. broad. Cells smallish, about 1–40th mm. ·03 mm. × ·0225 ·0275+·025 ·0275 × ·025 ·0225 × ·02.

This species, the handsomest of our native *Radulæ*, has recently been deservedly named by Herr Jack in honour of its original discoverer, Dr. Carrington, whose painstaking labours in this department of cryptogamic botany have, to the sorrow of his friends, for a considerable time been interrupted by continuous and serious illness. So far back as 1861, when Dr. Carrington first found it, he was inclined to look upon it as a distinct species, but in the absence of male and female, deferring to the opinion of some of his friends, published it as var. *major* of *Radula aquilegia*. Lately the male plant having been found amongst specimens collected by the late Dr. Moore, of Dublin, and the late G. E. Hunt, of Manchester, which clearly show its specific difference from *Radula aquilegia*, Dr. Carrington was preparing to publish it as a distinct species, when Herr Jack wrote that he had nearly ready a monograph on the European *Radulæ*, and that in it he had raised the *Radula aquilegia*, Tayl., var. *major*, Carringt., to specific rank as *Radula Carringtonii*.

From Jack's monograph I add the following translation :—

"*Radula Carringtonii* grows in close patches of an olive-green or brown colour. The stems are from 4 to 5 centimetres long, irregularly pinnate, with somewhat ascending branches. The leaves imbricate one another, and are almost flat, margin entire; the superior lobe stands off obliquely from the stem, is rotundate almost reniform, 0·8 mm. long and 1·3 mm. broad, whilst the diameter of the chief stem and the broader branches reach to 2·4 mm. The lobule reaches hardly to half the length and breadth of the superior lobe, with which it forms a sharp angle, and upon which it lies flat. The same is quadrate, or more or less trapeziform. The female involucral leaves are oblong-oval, with oval-rotundate lobules $\frac{2}{3}$ as large. Archegonia 7–8.

"*Radula Carringtonii* has in common with *Radula aquilegia* the olive-brown colour which is wanting with the European species, but it differs from the last in wanting the characteristic form of lobule, which is by Dr. Taylor especially pointed out, namely, the strong swelling of the same along its base. With *Radula aquilegia* the lobule forms with the superior lobe quite an obtuse angle, which is obliquely extended broader than high, and its obtuse corner is sideways directed. With *Radula Carringtonii* the lobule forms with the superior ones an acute angle, and appears as an almost flat towards above, and below mostly somewhat irregular quadrate. Further, with *R. aquilegia*, the branches stand off the stem almost at right angles, and the leaves are forwardly directed. The opposite circumstance is found with *Radula Carringtonii*, with which the branches are a little forwardly directed, but the leaves stand off obliquely. This last one resembles mostly *Radula complanata*, but is distinguished from it by its dioicous character and the olive-brown colour."—*Jack*, in Flora, pp. 384–5, 1881.

Dr. Carrington, whom I have to thank for specimens of the plant, kindly furnishes the following additional notes :—

"The female is not unfrequent, but hitherto in a barren or immature state, and the colesule is unknown; it occurs in wide closely imbricated patches on rocks or trees of a translucent amber or olive-brown colour, and with an oily lustre. From *R. complanata*, which it resembles in size and form, it is at once distinguished by the dull pale glaucous leaves and the monoicous inflorescence of that species. The shoots are irregularly pinnate or bipinnate, the branches alternate and generally short.

"From *R. aquilegia*, to which it approaches nearly in habit, it may be known by the larger size, and by the less convex elliptic-ovate complanate leaves, not gibbous at the base, and the form of the lobule, which is rhomboidal with a sharp outer angle, vertical in position and appressed to the upper lobe as in *R. aquilegia:* the texture is also thinner and more translucent, golden-brown by transmitted light; the male spikes are alternate, lateral, and oblong, consisting of from 10–20 perigonial leaves. The fertile shoots are abundant, but generally abortive, probably from the rarity of the male plant. They are short, lateral, consisting of 3–4 pairs of accrescent leaves, the involucral leaves larger, inflexed at the summit, so as to appear truncate. Recently, when looking over a tuft collected at Killarney by Prof. Lindberg, I thought I had found the colesules, but, on closer examination, the *Radula* proved to be intermingled with *Phragmicoma Mackaii*, to which it bears a curious resemblance, but may be distinguished by the panoicous inflorescence and the presence of stipules in the latter.

"*Radula Carringtonii* resembles *R. voluta*, Tayl., in the form of the male spikes, but in that species the leaves are dull, very pale green, and the lobe broader, undulate, and crossing the stem."

NOTES ON THE RUBI OF WARWICKSHIRE.

By James E. Bagnall.

(Concluded from p. 104).

26, 26*. *Rubus macrophyllus*, Weihe, a. *umbrosus*, Arrh. — In hedges, quarries, heaths, and heathy waysides. Common in the Tame Basin. (1) Sutton Park; Middleton Heath; Ansley; Bentley Park; Coleshill Heath; Stonebridge. (2) Rounshill Lane, Kenilworth; lanes about Coventry; Hearsall Common. Two varieties of this occur; the one has thick and densely felted leaves, as in specimen 26; the other having thin leaves, often nearly glabrous beneath, as in specimen 26*.

27, 27*. *R. macrophyllus*, Weihe, *β. macrophyllus*, W. & N.—Hedges, woods, bushy places, and marly banks. Locally abundant. (1) Shelly Lane, near Solihull; Bentley Heath; Shirley Street, near Hockley; Trickley Coppice; Arley, &c. (2) Kenilworth Heath; Dunchurch Road, near Rugby; also at Hill Clump, Honington. *F. Townsend.*

27** is a more glandular form growing in large clumps, and is more a heath-land form than a hedge form; this I find on (2) Kenilworth Heath (1), Bentley Heath, and Shirley.

28, 28*. *R. macrophyllus*, Weihe, c. *Schlectendalii*, W. & N.—In hedges, woods, and damp heath-lands. Locally abundant. (1) Sutton Park, confirmed by Prof. Babington. Baulk Lane, Berkswell; road from Nuneaton to Atherstone. (2) Lanes about Baddesley Clinton. A peculiar glandular form is abundant in Haywoods, Baddesley Clinton.

29. *R. amplificatus*, Lees.—In woods and hedges. Locally abundant. (1) In lanes about Solihull; lanes about Coleshill

Heath; Arley. (2) Near Coventry; Rugby, Kenilworth, Warwick. Very typical and abundant on Kenilworth Heath. The plants about Solihull I pointed out to Mr. Edwin Lees in 1876, and he confirmed the nomenclature.

29*. *R. macrophyllus*, var.—A marked form, which I find in quarries near Hartshill; this I have provisionally called *R. Babingtonii.* It seems nearly related to the macrophyllus group. Prof. Babington says it is unlike any form in his extensive herbarium.

30. *R. macrophyllus*, var. ε. *glabratus.*—In woods, hedges, thickets. Very local, and seen only in the Tame Basin at present. (1) Sutton Park; Minworth Lane, named by Prof. Babington. Woods near Solihull; main road from Hampton-in-Arden to Meriden; Marston Green.

30*. *R. macrophyllus*, var.—A peculiar form, from Sutton Park, allied I think to the above. It was named by Mr. Bloxam *R. ramosus*, but does not seem to be at all like any variety of that bramble.

31. *R. mucronulatus*, Bor.—In hedges, banks, and woods. Locally abundant in the Tame Basin; rare in the Avon Basin. (1) Hartshill Wood, abundant in a deep shady dingle there. Bentley Park; near Atherstone on the Tamworth Road, Marston Green; Trickley Coppice, Middleton. (2) Dilke Lane, Rowington. The plants in Bentley Park and Hartshill Wood are more glandular than the type, and are probably the *R. festivus*, Mull. The Rowington plant is exactly the plant distributed by Mr. Bloxam in his fasciculus; it is always a ternate-leaved plant with a round pilose stem.

31*. *R. Borreri*, Salter.—On heaths and heathy footways. Very local. This can scarcely be separated from *R. Sprengelii*, Weihe. What I call this variety I find on heath-lands. (1) Sutton Park; lanes about Solihull and Shirley; Coleshill Heath. (2) Dunchurch Road, Rugby; Cathiron Lane, near Rugby.

32. *R. Sprengelii*, Weihe.—In woods and on shady banks, Rather rare, but abundant in some of the stations. (1) Sutton Park; Chelmsley Wood; Featherstone Coppice, Solihull; Ansley Coal-field.

R. rubicolor, Blox. MS.—Prof. Babington thinks my specimens collected from Mr. Bloxam's old station are not correct (the place was marked on my Ordnance Map by Mr. Bloxam). Probably mine is another plant; the hedges are very frequently cut down, and the plant may have been destroyed. Dr. Syme records it from "near Mancetter, Warwickshire (*Rev. A. Bloxam*), from which place he sent me specimens." I have specimens from the same bush given me by Mr. Bloxam, but have no duplicates.

33. *R. Bloxamii*, Lees.—In woods, hedges, on heath-lands, and heathy waysides. Locally common. (1) Hartshill Wood, abundant 1880. Ansley Coal-field Heath; Arley; Coleshill Heath; Middleton Heath; Sutton Park; Solihull, Honily. (2) Lanes about Brandon; Kenilworth; and Allesley.

33*. *R. Bloxamii*, var.—A form of this from hedges in a lane near Solihull: this Prof. Babington says closely resembles the *R.*

thyrsiflorus in 'Rubi Germ.' (tab. 34). I also find it abundant in Rounshill Lane, Kenilworth.

34. *R. hystrix*, Weihe.—In woods, and rarely on banks. Very local. (1) Darnelhurst, Sutton Park; Hoare Park, near Shustoke; lane by Bentley Park; field path near Ansley Coal-field; Arley Wood; lane from Mancetter to Oldbury. (2) Combe Woods; Crackley Wood, Kenilworth.

35. *R. rosaceus*, Weihe.—In woods, thickets, and hedges. Very local, but abundant in some stations. (1) Thicket near Hoare Park, Shustoke. Very abundant; near Meriden Shafts and Boultbie Wood; Ballard's Green, Arley. (2) Near Corley; abundant in Combe Woods, near Brinklow; Alveston Pastures, near Stratford-on-Avon. From all these stations what I think is typical *R. rosaceus;* a very distinct plant from the plant Mr. Bloxam called *R. hystrix*. The above I send from three stations.

36. *R. scaber*, Weihe.—In shady woods, on damp heath-lands, and marly banks. Local, but abundant in most of the stations. (1) Sutton Park, abundant; Trickley Coppice, Middleton. (2) Rounshill Lane, Kenilworth; Old Park, near Warwick; lanes near Hewell Grange. This is a coarse, hairy, glandular form, with lobate serrate leaves and white flowers; calyx clasping or patent from the ripe fruit.

37. *R. scaber*, from Sutton Park, but very local there; it was confirmed by Mr. Bloxam as exactly his *R. scaber*. This grows with the type, but is always a very distinct-looking plant; having flat coriaceous leaves, less coarsely toothed, stem much less hairy, setose, and prickly, panicle more open and a more erect habit.

38. *R. rudis*, Weihe.—In hedges and bushy places. Local, but occurring at intervals all through the county. (1) Sutton Park; lanes about Hurley; over Whitacre; Ansley; Oldbury; Shelly; Solihull. (2) Compton Wynyates, *F. Townsend?* Oakley Wood; Leek Wootton; Kenilworth; Corley Moor; Arrow; Oversley Wood.

39. *R. rudis*, var. *microphyllus*, Blox. MS.—On heathy footways. Apparently rare. I have only seen it on (1) heathy waysides near Middleton. (2) Marly banks near Leek Wootton.

40, 41, and 42. *R. Radula*, Weihe.—In woods, hedges, and thickets; on heaths, banks, and waysides. Common throughout the county, but varying greatly. I have not discriminated between the forms in my note-book, but send three of the most marked forms of our district.

43, 44*, 44**. *R. Koehleri*, Weihe; *verus*, Bab.—In woods, hedges, and banks. Very local. (1) Kingsbury Wood; Slowly Hill, Shustoke; meadows near Maxtoke Castle; Sutton Park; Four Oakes, near Sutton (this form is an approach to the *R. diversifolius*); road from Honily to Balsall Street. (2) Combe Pastures, near Coventry. *R. Koehleri verus* seems to be a plant very nearly approaching *R. Bloxamii* on the one hand, and *R. diversifolius* on the other, varying more than the other two varieties of this sub-species.

45. *R. Koehleri*, Weihe; b. *infestus*, Bab.—On hedge-banks, in

hedges and woods. Local. (1) Bentley Park and Heath; Merivale; near Stockingford. A small form that both Prof. Babington and Mr. Bloxam thought to be this variety abundant on heathlands, Sutton Park.

46. *R. pallidus*, Weihe.—In woods and hedges, and rather common, and, so far as I have seen, distributed throughout the county.

47 is the woodland form of this variety, frequent in our shady woods. This is the *R. pallidus* of Bloxam's fasciculus; his *R. Koehleri* was the more robust hedge plant of this variety. Mr. Bloxam pointed out both these plants to me in the Twycross district.

48. *R. fusco-ater*, Weihe.—On hedge-banks. Very rare. (1) Lane at Minworth, determined by Prof. Babington; the plant alluded to in "Notes on Rubi," 'Journal of Botany,' 1878,' p. 176. This is very unlike Mr. Bloxam's *R. fusco-ater;* specimens I send numbered 49, from the Lickey Hills, Worcester, are authenticated by Mr. Bloxam as this species. (2) Near Oakley Wood I find plants similar to the Lickey plant. This plant is also recorded in the 'British Rubi,' 216, from (1) Sutton Park, and (2) Wyken Lane, near Coventry. I have not succeeded in finding it in either locality.

50. *R. emersistylus*, a. *Bagnallii*, Blox. (Journ. Bot., 1878, p. 175–6. This is abundant in (2) Haywoods, and was considered by Mr. Bloxam to be a truly distinct plant. As he grew it in his garden at Harborough Magna for some years, he had an opportunity of carefully studying the plant, and comparing with *R. Briggsii*, which he also cultivated.

51. *R. diversifolius*, Lindl.—In hedges and on heathy waysides. Locally abundant. (1) Middleton Heath; lanes about Wishaw; Coleshill Heath; Olton Canal Bank. (2) Hill Clump, Honington, *F. Townsend;* lanes about Stratford-on-Avon and Alcester; Shelfield Green. A form which Prof. Babington considers near *R. horrifactus*, Weihe, occurs in a wood (2) near Tardebig.

52 is a variety of *R. diversifolius*, which I have only seen in one locality, in a hedge in the lane from Brandon to Binley Common; (2) where it is abundant. On this Prof. Babington remarks:—"It is very like the plant noticed from Waith. in 'The British Rubi,' p. 224. At present I place it under *R. diversifolius*. It is a very beautiful plant." My own opinion was that it was *Rubus Kœhleri, β. infestus*.

53. *R. Lejeunii*, Weihe.—In woods and on hedge-banks. Rare. (1) Friars Wood, Bentley Park; lane near Bentley Park, border of Ironstone Wood, Oldbury. All these localities are within a radius of one mile.

54. *R. Guntheri*, Weihe.—In woods, on damp heath-lands and on hedge-banks. Very local. (1) Hartshill Wood, 1878, fairly abundant. Friars Wood, Bentley Park; wood near Hoare Park, Shustoke; Ironstone Wood, Oldbury; on banks in a lane near Atherstone; Sutton Park, in woods and on damp heathy places. (2) Fernhill Wood; Haywoods; Baddesley Clinton; Old Park near Alcester.

R. humifusus, Weihe.—"Reported from Warwickshire," *Syme, E. B.*, iii. 189. This I have never seen, nor can I trace any other record of it.

55. *R. foliosus*, Weihe. — In woods and hedges. Rare, but abundant in some of the stations. (1) Ansley Coal-field Heath. Very abundant, 1880, but building operations bid fair to destroy it there. Lane from Hartshill to Mancetter; stone-quarries between Hartshill and Nuneaton; Hartshill Wood, 1878. All these stations are within a radius of three miles. The Warwickshire plant differs markedly from the Devonshire plant; this I had an opportunity of noticing, as Mr. Briggs sent me fresh specimens from his station during the present year. One or other of the plants will require a new name. Mr. Briggs's plant appears to me to be degrees nearer the plate of *Rubi Germ.* than our plant.

56. *R. adornatus*, Mull. (*atro-rubens*, Blox.)—In woods, hedges, and on heaths and heathy waste places. Locally abundant. (1) Sutton Park; lane near Marston Green; lane at Minworth; lanes about Temple Balsall; coppice at Elmdon; lanes about Solihull. (2) Haywoods; lanes about Kingswood; Tile Hill Wood; borders of Oakley Wood, near Warwick; Alveston Pastures, wood near Stratford-on-Avon. A very distinct bramble, not subject to much variation; always, as I think, easily detected. This is combined by Prof. Babington ('Manual,' ed. 8) with *R. foliosus*, from which it seems to differ widely in the characters of the leaves, stem, and panicle. Always recognisable by the hairy glandular stem and panicle, with abundant and strongly declining prickles on both barren shoot and panicle.

57. *R. glandulosus*, a. *Bellardi*, Weihe.—In woods. Rare. (1) Hartshill Wood; wood near Hoare Parke, Shustoke.

58. *R. glandulosus*, a. sub-var. *dentatus*, Blox.—In woods and on shady banks. Rare. (1) Hartshill Wood; wood near Hoare Park, Shustoke; near Boultbie Wood, Fillougley. (2) Wood near Allesley, Coventry Road; Anstey Wood, near Wootton Wawen.

59. *R. glandulosus*, b. *hirtus*, Wald.—Woods and banks. Rare. (1) Borders of Weigh Wood, Fillougley. (2) Haywoods.

60. *R. glandulosus*, sub-var. *rotundifolius*, Blox. — Borders of woods, hedges, and hedge-banks. Rare. (1) Border of wood near Bentley Park; on banks in lane above Hoare Park, Shustoke.

61. *R. Balfourianus*, Blox.—In hedges. Locally abundant. (1) Lanes about Shirley and Solihull; near Packington Hall; near Stonebridge; Atherstone Road, near Over Whitacre. (2) Combe Fields and Stoke, near Coventry; Alcester and Shelfield Green. Off the type, Alcester Road, near Stratford-on-Avon.

62. *R. tenuiarmatus*, Lees.—On hedge-banks. Apparently rare. (1) Near Hoare Park, Shustoke. (2) Borders of wood near Hewell Grange, Tardebig. This I have compared with specimens confirmed by Mr. Edwin Lees, and my specimens appear identical with his.

63. *R. corylifolius*, var. *sublustris*, Lees.—In hedges and on hedge-banks. Local; abundant in some districts. (1) Lanes about Boldmir, near Sutton; near New Park, Middleton; Arley;

Marston Green; Hampton-in-Arden; Shelly Coppice, near Solihull. Confirmed by Prof. Babington from this station. (2) Near Warwick, near Stratford-on-Avon; Rugby.

64. *R. corylifolius*, var. *conjungens*, Bab.—In hedges and on hedge-banks. Very local. (1) Sutton Park, named by Prof. Babington. Lane near Solihull. (2) Shrewley Common; Stoke Heath, on banks, abundant; Combe Fields, near Coventry; Dunchurch Road, near Rugby.

65. *R. corylifolius*, var. *purpureus*, Bab.—In hedges and on hedge-banks. Locally abundant. (1) Very abudant in hedges and on banks about Minworth and Curdworth; lane by Arley Station. A very marked form of this near Astley, having the panicle quite as leafy as in *R. foliosus*. (2) Near Warwick; Hatton; abundant in the Banbury Road, from Stratford to Eatington; bridle road near Luddington. This is a very marked form, formerly named for me, by Rev. A. Bloxam, *R. concinnus*, Baker.

66. *R. spinosissimus*, Blox., is a very prickly variety of *R. corylifolius*, of which I have no duplicate; this is very abundant in Monkspath Street, near Shirley. A form like Bloxam's fasciculus specimen, labelled *R. deltoideus*, Mull., occurs in a wet lane near Coleshill.

67. *R. althæifolius*, Host.—In hedges, and on hedge-banks. Rather rare. (2) Wyken Lane, near Coventry, 1880. Hearsal Common, near Coventry, 1881. In a hedge near Salford Priors; in hedges near Alcester, on the road to Great Alne; rough pastures near Honington Hall, 1880. Rounshill Lane, near Kenilworth.

67*. This is a form that seems between *althæifolius* and *cæsius;* it occurs in lias banks near (2) Bidford.

68. *R. tuberculatus*, Bab.—In hedges. Local. (1) Lanes near Shirley; Little Packington, near the Rectory; lane near Ridge Lane, Bentley Park. (2) Hill Clump, Honington, *F. Townsend.* The specimens from some of these districts will compare well with specimens I received from the Hon. J. L. Warren.

69. *R. cæsius*, a. *umbrosus*, Reich.—In woods and on banks. Locally abundant. (1) Drayton Bushes, named by Prof. Babington; near Brinklow; near Prince Thorpe; Chesterton Wood.

70. *R. cæsius*, b. *tenuis*.—Bell Salt, in hedges and on banks. Rather rare. (1) Ruins of Maxtoke Priory. (2) Oversley Hill, near Alcester; Steeple Hill, Bidford; Combe Woods, near Coventry.

71. *R. cæsius*, c. *ulmifolius*, Presl.—On roadsides; heaths and hedge-banks. Local. (1) Near Bannersley Pool, Coleshill; Monkspath, near Shirley. (2) Hazler; near Alcester; Chesterton Wood; Corley Moor.

72. *R. cæsius*, var.—A variety abundant in Alveston Pastures, wood near Stratford-on-Avon; probably var. b. *tenuis*.

73. *R. cæsius*, var., from Oversley Mill, near Alcester, is a very remarkable form. The nearest approach to this is a specimen I have of Mr. Bloxam's, which he calls *R. cæsius, intermedius*.

SHORT NOTES.

Introduced Asters (see p. 83).—I have in my herbarium, named by Dr. Asa Gray, the following:—(1) *A. salignus*, Willd., from Wicken Fen; Springwood Park Woods, near Kelso, from A. Brotherston. (2) *A. longifolius*, Lam., by Tay-side, near Perth, J. Sim; and Kinnoul, A. Newton. (3) *A. paniculatus*, Lam., from a bog by the south-west side of Derwentwater, M. Wright. (4) *A. Novi-Belgii*, Linn., from Tay-side, near Perth, J. Sim. (5) *A. Tradescanti*, Linn., from Thornhill Bridge, near Thames Ditton, H. C. Watson, as *A. leucanthemus*. This Dr. Gray named for me "*A. Tradescanti*, pro parte," but apparently for Mr. Britten *A. paniculatus*. It may be the same as the Derwentwater *A. paniculatus*, but appears somewhat different.—C. C. Babington.

Carex montana, Linn., in East Sussex.—I had the pleasure to rediscover this rare Carex on some heathy ground between Heathfield Station and the wall of Heathfield Park, in the Cuckmere district, East Sussex, on the 4th April last, when it was in full flower, but with fruit only just formed. It was first discovered by Mr. Mitten, in 1842, near Tunbridge Wells, where I gathered specimens last year; and Mr. Hemsley informs me that there are specimens in Mr. Borrer's herbarium at Kew, collected at Heathfield on the 2nd May, 1849, since which time it appears to have quite escaped observation. Mr. Watson, in Top. Bot., states that it only occurs in six counties in England.—F. C. S. Roper.

Development of Osmunda regalis.—Mr. Hobkirk's assertion, that "all the gardeners and fern-growers to whom he has shown the specimens [of the early stages of growth of *Osmunda regalis*] state that it is quite new to them," is rather startling. I am quite able to confirm, from my own observation, Mr. Hobkirk's account of the various stages which the fern passes through. I remember once bringing home young plants in the first and second year's stages, which I found growing on the rhizome of an old plant in a bog ditch in Cornwall; but they did not survive the first winter in cultivation.—Alfred W. Bennett.

Tolypella glomerata, Leonh., in South Lancashire.—A few days ago Mr. Searle, of Ashston, sent me from Southport, a box of aquatic plants, and among them several species of *Characeæ*. One of these proved to be the above species. No *Tolypella* seems to have been recorded from the West of England; hence this station is interesting, as well also from its being about mid-way between Mr. Nicholson's Yorkshire station (Journ. Bot., 1880, p. 373) and that of Dublin.—Arthur Bennett.

Abstract.

NEW GENERA AND SPECIES OF PHANEROGAMS PUBLISHED IN PERIODICALS IN BRITAIN IN 1881.

The periodicals referred to in the compilation of this list are:—'Botanical Magazine,' 'Gardeners' Chronicle,' 'Icones Plantarum,' 'Journal of Botany,' 'Journal' and 'Transactions' of the Linnean Society of London.

For the convenience of those who follow Art. 50 of the 'Lois de la Nomenclature Botanique,' we have added in square brackets the authority for the publication of certain names which are cited from the MSS. of the original describers of the species.

Acacia Hunteri, *Oliv.* (Leguminosæ).—Aden. (Ic. Plant. t. 1350.)

Acanthophippium Curtisii, *Rchb. f.* (Orchideæ). — Malaya. (Gard. Chron. xv. 169.)

Aciachne, *Benth.*, gen. nov.; *A. pulvinata*, sp. unica (Gramineæ, Agrostideæ).—S. America. (Ic. Plant. t. 1362.)

Agave Toneliana, *Baker* (Liliaceæ). (Gard. Chron. xv. 362.)

Alberta laurifolia, *Baker* (Compositæ).—Madagascar. (Journ. Linn. Soc. xviii. 271.)

Amphidoxa filaginea, *Ficalho & Hiern* (Compositæ).—Central Africa. (Trans. Linn. Soc. 2nd s. ii. 21, tab. 4.)

Androsace mucronifolia, *Watt* (Primulaceæ). — N.W. India. (Journ. Linn. Soc. xviii. 381.)

Angræcum fastuosum, *Rchb. f.* (Orchideæ). — Madagascar. (Gard. Chron. xvi. 748.)

Aponogeton quadrangulare, *Baker.*—Madagascar. (Journ. Linn. Soc. xviii. 279.)

A. ulvaceum, *Baker.*—Madagascar. (Id. 279.)

Arabis bijuga, *Wall.* (Cruciferæ).—N.W. India. (Journ. Linn. Soc. xviii. 378, t. xii.)

A. pangiensis, *Wall.*—N.-W. India. (Id. 378, t. x.)

Asarum caudigerum, *Hance* (Aristolochiaceæ).—Canton. (Journ. Bot. p. 142.)

Athrixia fontana, *MacOwan* (Compositæ).—Cape. (Journ. Linn. Soc. xviii. 391.)

Babiana socotrana, *Hook. f.* (Irideæ).—Socotra. (Bot. Mag. t. 6585.)

Bauhinia Serpæ, *Ficalho & Hiern* (Leguminosæ).—Central Africa. (Trans. Linn. Soc. 2nd s. ii. 20.)

Begonia socotrana, *Hook. f.* (Begoniaceæ).—Socotra. (Gard. Chron. xv. 8, with figure; Bot. Mag. t. 6555.)

Begoniella Kalbreyeri, *Oliv.* (Begoniaceæ).—Antioquia. (Ic. Plant. t. 1352.)

Bolbophyllum Bowringianum, *Rchb. f.* (Orchideæ).—Nepal. (Gard. Chron. xv. 814.)

Bollea pallens, *Rchb. f.* (Orchideæ). (Id. xv. 462.)

Brachystegia floribunda, *Benth.* (Leguminosæ).—Zambesia. (Ic. Plant. t. 1359.)

B. globiflora, *Benth.*—Zambesia. (Id.)

B. longifolia, *Benth.*—Zambesia. (Id.)

BRASSIA SIGNATA, *Rchb. f.* (Orchideæ). (Gard. Chron. xvi. 6.)

BURMANNIA KALBREYERI, *Oliv.* (Burmanniaceæ).—Antioquia. (Ic. Plant. t. 1357.)

CARMICHAELIA KIRKII, *Hook. f.* (Leguminosæ).—New Zealand. (Ic. Plant. t. 1332.)

CATASETUM TIGRINUM, *Rchb. f.* (Orchideæ). (Gard. Chron. xv. 40.)

CEPHALANTHUS NATALENSIS, *Oliv.* (Rubiaceæ).—S. Africa. (Ic. Plant. t. 1331.)

CHIRONIA MADAGASCARIENSIS, *Baker* (Gentianeæ).—Madagascar. (Journ. Linn. Soc. xviii. 273.)

CINCHONA LEDGERIANA, *Moens MSS.* [*Trimen*] (Rubiaceæ).—Bolivia. (Journ. Bot. p. 323, tt. 222, 223.)

CIRRHOPETALUM ABBREVIATUM, *Rchb. f.* (Orchideæ). (Gard. Chron. xvi. 70.)

C. TRIGONOPUS, *Rchb. f.* (Id. p. 71.)

CLEMATIS STRIGILLOSA, *Baker* (Ranunculaceæ).—Madagascar. (Journ. Linn. Soc. xviii. 265.)

CLERODENDRON MACROCALYCINUM, *Baker* (Verbenaceæ).—Madagascar. (Journ. Linn. Soc. xviii. 275.)

COELOGYNE ARTHURIANA, "n. sp. (?)," *Rchb. f.* (Orchideæ). (Gard. Chron. xv. 40.)

C. BRACHYPTERA, *Rchb. f.* (Orchideæ).—Burma. (Id. xvi. 6.)

COLLABIUM SIMPLEX, *Rchb. f.* (Orchideæ).—Borneo. (Id. xv. 462.)

COMBRETUM PACHYCLADUM, *Baker* (Combretaceæ).—Madagascar. (Journ. Linn. Soc. xviii. 270.)

CORNUS CRISPULA, *Hance* (Cornaceæ).—China. (Journ. Bot. p. 216.)

C. PAUCINERVIS, *Hance.*—China. (Id. p. 216.)

COTYLEDON PANNOSA, *Baker* (Crassulaceæ).—Madagascar. (Journ. Linn. Soc. xviii. 269.)

CRABBEA OVALIFOLIA, *Ficalho & Hiern* (Acanthaceæ).—Central Africa. (Trans. Linn. Soc. 2nd s. 24, t. 6.)

CRASSULA DEPENDENS, *Bolus* (Crassulaceæ).—Cape. (Journ. Linn. Soc. xviii. 391.)

CRINUM BAINESII, *Baker* (Amaryllidaceæ).—Transvaal. (Gard. Chron. xvi. 39.)

C. BALFOURII, *Baker.*—Socotra. (Bot. Mag. t. 6570; Gard. Chron. 72.)

C. CUMINGII, *Baker.*—Philippines. (Id. xvi. 72.)

C. IMBRICATUM, *Baker.*—Cape Colony. (Gard. Chron. xv. 760.)

C. SERRULATUM, *Baker.*—Cambodia. (Id. xv. 786.)

C. STRACHEYI, *Baker.*—Kumaon, cult. (Id. xvi. 72.)

C. WELWITSCHII, *Baker.*—Angola. (Id. xvi. 40.)

CROCUS BILIOTTII, *Maw* (Iridaceæ).—Asia Minor. (Id. xvi. 303.)

C. BOISSIERI, *Maw.*—Cilicia. (Id. 304.)

C. CORSICUS, *Maw.*—Corsica. (Id. 367.)

C. DANFORDIÆ, *Maw.*—Asia Minor. (Id. 781.)

C. KOROLKOWI, *Regel & Maw.*—Asia Minor. (Id. 718.)

C. TAURI, *Maw.*—Cilicia. (Aucher-Eloy, no. 2654.) (Id. 749.)

CROTALARIA ERISEMOIDES, *Ficalho & Hiern* (Leguminosæ).—Central Africa. (Trans. Linn. Soc. 2nd. s. ii. 17.)

Cryptocentrum, *Benth.*, gen. nov. (Orchideæ).—Ecuador. (Journ. Linn. Soc. xviii. 325.)

Cypripedium Burbidgei, *Rchb. f.* (Orchideæ).—Borneo. (Gard. Chron. xvi. 38.)

Dendrobium Curtisii, *Rchb. f.* (Orchideæ).—Borneo. (Id. 102.)

D. Treacherianum, *Reich. f. MSS.* [*Hook. f.*]—Borneo. (Bot. Mag. t. 6591.)

Dianthus Serpæ, *Ficalho & Hiern* (Caryophyllaceæ).—Central Africa. (Trans. Linn. Soc. 2nd. s. ii. 17, t. 3.)

Dipcadi Bakerianum, *Bolus* (Liliaceæ).—Cape. (Journ. Linn. Soc. xviii. 394.)

Diplorhynchus, *Welw. MSS.* [*Ficalho & Hiern*], gen. nov. (Apocyneæ); *D. psilopus*.—Central Africa. (Trans. Linn. Soc. 2nd s. ii. 22, t. 5.)

*D mossambicensis, *Benth.*—Zambesia. (Ic. Plant. t. 1355.)

Dracæna Cantleyi, *Baker* (Liliaceæ).—Singapore. (Journ. Bot. p. 326.)

Eleusine macrostachya, *Benth.* (Gramineæ).—Madagascar. (Journ. Linn. Soc. xix. 107.)

Enteropogon leptophylla, *Benth.* (Gramineæ).—Madagascar. (Id. 101.)

Epidendrum Stangeanum, *Rchb. f.* (Orchideæ).—Panama. (Gard. Chron. xv. 462.)

Eragrostis Cœlachyrum, *Benth.* (Gramineæ Festuceæ).—Arabia. (Ic. Plant. t. 1368.)

E. elata, *Munro MS.* [*Ficalho & Hiern*].—Africa. (Trans. Linn. Soc. 2nd. s. ii. 32, no full description.)

E. mindensis, *Ficalho & Hiern.*—Central Africa. (Id.)

E. Pierchii, *Benth.*—Beloochistan. (Ic. Plant. 1369.)

Eria ignea, *Rchb. f.* (Orchideæ).—Borneo. (Gard. Chron. xv. 782.)

Ericinella passerinoides, *Bolus* (Ericaceæ).—Cape. (Journ. Linn. Soc. xviii. 393.)

Erythrospermum polyandrum, *Oliv.* (Bixineæ).—Samoa. (Ic. Plant. t. 1333.)

Euadenia eminens, *Hook. f.* (Capparideæ).—W. Trop. Africa. (Bot. Mag. t. 6578.)

Euphorbia primulæfolia, *Baker* (Euphorbiaceæ).—Madagascar. (Journ. Linn. Soc. xviii. 278.)

Fimbristylis Burchelli, *Ficalho & Hiern* (Cyperaceæ).—Central Africa. (Trans. Linn. Soc. 2nd s. ii. 28, t. 6.)

Gazania cæspitosa, *Bolus* (Compositæ).—Cape. (Journ. Linn. Soc. xviii. 393.)

Gerbera podophylla, *Baker* (Compositæ). -- Madagascar. (Id. 272.)

Gethyllis longistyla, *Bolus* (Amaryllidaceæ).—Cape. (Id. 396.)

Gomphia deltoidea, *Baker* (Ochnaceæ).—Madagascar. (Id. 265.)

Gongora similis, *Rchb. f.* (Orchideæ). (Gard. Chron. xvi. 812.)

Halleria ligustrifolia, *Baker* (Scrophulariaceæ).—Madagascar. (Journ. Linn. Soc. xviii. 273.)

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* See Journ. Bot., 1882, p. 54 (foot-note).

Hechtia cordylinoides, *Baker* (Bromeliaceæ).—Mexico. (Bot. Mag. t. 6554.)

Hemicarex, *Benth.* gen. nov. (Cyperaceæ).—India and S. Africa. (Journ. Linn. Soc. xviii. 367.)

Herpolirion capense, *Bolus* (Liliaceæ).—Cape. (Id. 395.)

Impatiens Marianæ, *Rchb. f.* (Geraniaceæ).—Upper Assam. (Gard. Chron. xv. 688.)

Indigofera Bojeri, *Baker* (Leguminosæ).—Madagascar. (Journ. Linn. Soc. xviii. 266.)

I. dodecaphylla, *Ficalho & Hiern.*—Central Africa. (Trans. Linn. Soc. 2nd s. ii. 18.)

I. leucoclada, *Baker.*—Madagascar. (Journ. Linn. Soc. xviii. 267.)

I. splendens, *Ficalho & Hiern.*—Central Africa. (Trans. Linn. Soc. 2nd s. ii. 19, t. 3.

I. trachyphylla, *Benth. MS.* [*Oliv.*] — Zambesia. (Ic. Plant. t. 1354.)

Jasminum gracillimum, *Hook. f.* (Oleaceæ).—N. Borneo. (Gard. Chron. xv. 9, with figure; Bot. Mag. t. 6559.)

J. Kitchingii, *Baker.*—Madagascar. (Journ. Linn. Soc. xviii. 272.)

Kefersteinia mystacina, *Rchb. f.* (Orchideæ). — Columbia. (Gard. Chron. xv. 530.)

Kigelia madagascariensis, *Baker* (Bignoniaceæ).—Madagascar. (Journ. Linn. Soc. xviii. 274.)

Kitchingia, *Baker*, gen. nov. (Crassulaceæ); *K. campanulata*, Baker.—Madagascar. (Journ. Linn. Soc. xviii. 269.) *K. gracilipes*, Baker.—Madagascar. (Id. 268, t. vii.)

Lagerstrœmia madagascariensis, *Baker* (Lythraceæ).—Madagascar. (Journ. Linn. Soc. xviii. 270.)

Leea bracteata, *Herb. Kew.* [*C. B. Clarke*] (Ampelideæ).—India. (Journ. Bot. p. 164.)

L. Brunoniana, *C. B. Clarke.*—Australia. (Id. p. 166.)

L. celebica, *C. B. Clarke.*—Celebes. (Id. p. 166.)

L. Cumingii, *C. B. Clarke.*—Philippines. (Id. p. 166.)

L. Kurzii, *C. B. Clarke.*—India. (Id. p. 165.)

L. linearifolia, *C. B. Clarke.*—Cambodia. (Id. p. 165.)

L. Mastersii, *C. B. Clarke.*—India. (Id. p. 142.)

L. setuligera, *C. B. Clarke.*—India. (Id. p. 105.)

L. tuberculosemen, *C. B. Clarke.*—India. (Id. p. 105.)

L. umbraculifera, *C. B. Clarke.*—India. (Id. p. 141.)

L. Wrightii, *C. B. Clarke.*—India. (Id. p. 105.)

Loranthus hoyæfolius, *Baker* (Loranthaceæ).—Madagascar. (Journ. Linn. Soc. xviii. 277.)

L. lenticellatus, *Baker.*—Madagascar. (Id. 278.)

L. nigrans, *Hance.*—China. (Journ. Bot. p. 209.)

Masdevallia fasciata, *Rchb. f.* (Orchideæ).—Columbia. (Gard. Chron. xv. 202.)

M. inflata, *Rchb. f.* (Id. xvi. 716.)

M. Winniana, *Rchb. f.* (Id. 198.)

Melodorum glaucescens, *Hance* (Anonaceæ).—Hong Kong. (Journ. Bot. p. 112.)

MICRONYCHIA, *Oliv.*, gen. nov.; *M. madagascariensis*, sp. unica (Anacardiaceæ).—Madagascar. (Ic. Plant. t. 1337.)

MICROSTYLIS CHLOROPHRYS, *Rchb. f.* (Orchideæ).—Borneo. (Gard. Chron. xv. 266.)

M. VENTILABRUM, *Rchb. f.*—Sunda. (Id. xvi. 717.)

MIMULOPSIS SPECIOSA, *Baker.*—Madagascar. (Journ. Linn. Soc. xviii. 274.)

NEPHTHYTIS CONSTRICTA, *N. E. Br.* (Araceæ).—Fernando Po. (Gard. Chron. xv. 790.)

NERINE FILIFOLIA, *Baker* (Amaryllidaceæ).—Orange Free State. (Bot. Mag. t. 6547.)

NICOTIANA AFFINIS, *T. Moore* (Solanaceæ).—(Gard. Chron. xvi. 141, with figure.)

NORONTIA BROOMEANA, *Horne MSS.* [*Oliv.*] (Oleaceæ).—Mauritius. (Ic. Plant. t. 1365.)

NOTYLIA LAXA, *Rchb. f.* (Orchideæ).—Brazil. (Gard. Chron. xvi. 620.)

OCTOMERIA COCHLEARIS, *Rchb. f.* (Orchideæ).—Brazil. (Id. xv. 266.)

ODONTOGLOSSUM CUSPIDATUM, *Rchb. f.* (Orchideæ).—N. Grenada. (Id. 428.)

O. SANDERSIANUM, *Rchb. f.*—Trop. America. (Id. xvi. 524.)

ONCIDIUM BRIENIANUM, *Rchb. f.* (Orchideæ).—Paraguay. (Id. xv. 40.)

O. GRANDIFLORUM, *Rchb. f.*—Columbia. (Id. 782.)

O. PHYLLOGLOSSUM, *Rchb. f.*—N. Grenada. (Id. 169.)

O. PRÆTEXTUM, *Rchb. f.* (Id. 720.)

ORTHOSIPHON AMBIGUUS, *Bolus* (Labiatæ).—Cape. (Journ. Linn. Soc. xviii. 394.)

OTANTHERA FORDII, *Hance* (Melastomaceæ).—Hong Kong. (Journ. Bot. p. 47.)

PANICUM NIGROPEDATUM, *Munro MS.* [*Ficalho & Hiern*] (Gramineæ).—South and Central Africa. (Trans. Linn. Soc. 2nd s. ii. 29.)

PARADISANTHUS MOSENI, *Rchb. f.* (Orchideæ).—Brazil. (Gard. Chron. xv. 298.)

PEDICULARIS EXIMIA, *Watt* (Scrophulariaceæ).—N.-W. India. (Journ. Linn. Soc. xviii. 381.)

PENTZIA PINNATIFIDA, *Oliv.* (Compositæ).—Natal. (Ic. Plant. t. 1340.)

PESCATOREA DORMANIANA, *Rchb. f.* (Orchideæ). (Gard. Chron. xv. 330.)

PHALÆNOPSIS MACULATA, *Rchb. f.* (Orchideæ).—Borneo. (Id. xvi. 134.)

P. SPECIOSA, *Rchb. f.*—Tropical Asia. (Id. xv. 562.)

P. STUARTIANA, *Rchb. f.* (Id. xvi. 748, 753, with figure.)

PHYSOTRICHIA BUCHANANI, *Benth.* (Umbelliferæ).—Zambesia. (Ic. Plant. t. 1358.)

PITCAIRNIA ARANEOSA, *Baker* (Bromeliaceæ).—N. Granada. (Journ. Bot. p. 231.)

P. CONCOLOR, *Baker.*—Peru. (Id. p. 299.)

P. CONSIMILIS, *Baker.*—Bolivia. (Id. p. 266.)

P. FIRMA, *Baker*.—Cult. (Id. p. 268.)

P. KALBREYERI, *Baker*.—N. Granada. (Id. p. 273.)

P. KEGELIANA, *K. Koch herb.* [*Baker*].—Guiana. (Id p. 230.)

P. LECHLERI, *Baker*.—Peru. (Id. p. 269.)

P. LEHMANNI, *Baker*.—N. Granada. (Id. p. 273.)

P. MEGASEPALA, *Baker*.—S. America. (Id. p. 229.)

P. MICROCALYX, *Baker*.—Cult. (Id. p. 228.)

P. NUDA, *Baker*.—Guiana. (Id. p. 269.)

P. ORGYALIS, *Baker*.—Ecuador. (Id. p. 273.)

P. PAUCIFLORA, *Baker*.—Guiana. (Id. p. 230.)

P. SPRUCEI, *Baker*.—S. America. (Id. p. 303.)

P. SUBPETIOLATA, *Baker*.—Peru. (Id. p. 267.)

PLERANDRA JATROPHIFOLIA, *Hance* (Araliaceæ).—Cult. (Journ. Bot. p. 275.)

PLEUROTHALLIS BARBERIANA, *Rchb. f.* (Orchideæ).—Trop. S. America. (Gard. Chron. xvi. 6.)

POLYGALA KRUMANINA, *Burchell MS.* [*Ficalho & Hiern*] (Polygalaceæ).—Central Africa. (Trans. Linn. Soc. 2nd. s. ii. 16.)

P. WATTERSII, *Hance*.—China. (Journ Bot. p. 209.)

POLYSTACHYA HYPOCRITA, *Rchb. f.* (Orchidaceæ).—W. Trop. Africa. (Gard. Chron. xvi. 685.)

POLYTOCA MACROPHYLLA, *Benth.* (Gramineæ).—Louisiade Archipelago. (Journ. Linn. Soc. xix. 12.)

PORANTHERA ALPINA, *Cheesem.* [*Hook. f.*] (Euphorbiaceæ).—New Zealand. (Ic. Plant. t. 1366 B.)

PROMENÆA MICROPTERA, *Rchb. f.* (Orchideæ). (Gard. Chron. xvi. 134.)

PRIMULA POCULIFORMIS, *Hook. f.** (Primulaceæ).—Central China. (Bot. Mag. t. 6582.)

RANDIA BUCHANANII, *Oliv.* (Rubiaceæ).—Zambesia. (Ic. Plant. t. 1356.)

RANUNCULUS BAURII, *MacOwan* (Ranunculaceæ).—Cape. (Journ. Linn. Soc. xviii. 390.)

R. PANGIENSIS, *Watt*.—N.W. India. (Id. 377, t. ix.)

REIMARIA OLIGOSTACHYA, *Munro* [*Benth.*] (Graminæ).—Florida and Cuba. (Id. xix. 34.)

RHANTERIUM EPAPPOSUM, *Oliv.* (Compositæ). — Beloochistan. (Ic. Plant. t. 1367.)

RHODODENDRON HENRYI, *Hance* (Ericaceæ).—Canton. (Journ. Bot. p. 243.)

RHODOCODON, gen. nov.; *R. madagascariensis*, Baker (Liliaceæ). (Journ. Linn. Soc. xviii. 280, t. viii.)

RHYNCHOSPORA RUPPIOIDES, *Benth.* (Cyperaceæ).—Ceylon; Paraguay. (Ic. Plant. t. 1344.)

SACCOLABIUM BORNEENSE, *Rchb. f.* (Orchideæ).—Borneo. (Gard. Chron. xv. 563.)

S. GRÆFFEI, *Rchb. f.*—Viti. (Id. xvi. 716.)

S. LITTORALE, *Rchb. f.* "nov. var.? species?" (Id. 198.)

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* [Dr. Hance informs us that this is certainly identical with his *P. obconica*, published in this Journal for 1880, p. 234.—ED. JOURN. BOT.]

Salvia cryptoclada, *Baker* (Labiatæ).—Madagascar. (Journ. Linn. Soc. xviii. 275.)

S. leucodermis, *Baker*.—Madagascar. (Id. 276.)

S. porphyrocalyx, *Baker*.—Madagascar. (Id. 277.)

S. sessilifolia, *Baker*.—Madagascar. (Id. 276.)

Sarcanthus flexus, *Rchb. f.* (Orchideæ).—Borneo. Gard. Chron. xvi. 492.)

Schismatoglottis crispata, *Hook. f.* (Araceæ).—Borneo. (Bot. Mag. t. 6576.)

Schizocapsa, gen. nov.; *S. plantaginea*, Hance (Taccaceæ).—Canton. (Journ. Bot. p. 292.)

Schmidtia quinqueseta, *Benth. MS.* [*Ficalho & Hiern*] (Gramineæ).—Africa. (Trans. Linn. Soc. 2nd s. ii. 31, no full description.)

Scilla humifusa, *Baker* (Liliaceæ).—Natal. (Gard Chron. xv. 626.)

S. (*Ledebouria*) microscypha, *Baker*.—Cape Colony. (Id. xvi. 102.)

S. (*Ledebouriana*) subsecunda, *Baker*.—Cape Colony. (Id. 38.)

Scirpus nindensis, *Ficalho & Hiern* (Cyperaceæ).—Central Africa. (Trans. Linn. Soc. 2nd s. ii. 27.)

Senecio microdontus, *Baker* (Compositæ).—Madagascar. (Journ. Linn. Soc. xviii. 271.)

S. phalacrocarpus, *Hance*.—Canton. (Journ. Bot. p. 151.)

S. trullæfolius, *MacOwan*.—Cape. (Journ. Linn. Soc. xviii. 392.)

Sophora viciifolia, *Hance* (Leguminosæ).—China. (Journ. Bot. p. 209.)

Sporobolus leptostachys, *Ficalho & Hiern* (Gramineæ).—Central Africa. (Trans. Linn. Soc. 2nd s. ii. 30.)

Stelis grossilabris, *Rchb. f.* (Orchideæ). (Gard. Chron. xvi. 717.)

Strongylodon madagascariensis, *Baker*.—Madagascar. (Journ. Linn. Soc. xviii. 267.)

Tecoma Nyassæ, *Oliv.* (Bignoniaceæ).—E. Trop. Africa. (Ic. Plant. t. 1351.)

Thespesia Danis, *Oliv.* (Malvaceæ).—E. Trop. Africa. (Ic. Plant. t. 1336.)

Trichocentrum Hoegei, *Rchb. f.* (Orchideæ).—Mexico. (Gard. Chron. xvi. 717.)

T. Pfavii, *Rchb. f.*—Central America. (Gard. Chron. xvi. 70.)

Thrixspermum muriculatum, *Rchb. f.* (Orchideæ). — India. (Id. 198.)

Uapaca clusiacea, *Baker*.—Madagascar. (Journ. Linn. Soc. xviii. 278.)

Urera Radula, *Baker* (Urticaceæ).—Madagascar. (Id. 279.)

Urginea alooides, *Bolus* (Liliaceæ).—Cape. (Id. 395.)

Vernonia Nyassæ, *Oliv.* (Compositæ).—Trop. Africa. (Ic. Plant. t. 1349.)

V. stenocephala, *Oliv.*—E. Trop. Africa. (Id.)

V. tanalensis, *Baker*. — Madagascar. (Journ. Linn. Soc. xviii. 271.).

Veronica Cheesemani, *Benth.* (Scrophulariaceæ).—New Zealand. (Ic. Plant. t. 1366 a.)

Vitis microdiptera, *Baker* (Ampelideæ).—Madagascar. (Journ. Linn. Soc. xviii. 266.)

Wullschlægelia calcarata, *Benth.* (Orchideæ).—N. Brazil (*Spruce*, n. 2847). (Journ. Linn. Soc. xviii. 342.)

Zephyranthes macrosiphon, *Baker* (Amaryllidaceæ).—Mexico. (Gard. Chron. xvi. 70.)

Notices of Books.

The fourth edition of Bentley's well-known and widely-used 'Manual of Botany' has recently appeared. The earlier editions have been noticed in this Journal at some length: it is only necessary to point out the improvements which have been made in the present issue. These consist mainly in an embodiment of the more important researches which have been familiarised to English readers by the translation (now out of print) of Sachs' 'Lehrbuch'; while the portion devoted to the economic and medicinal plants has been supplemented by references to Flückiger and Hanbury's 'Pharmacographia,' and Bentley and Trimen's 'Medicinal Plants.' Many other alterations have been made, so that Prof. Bentley is justified in saying that "it may be almost regarded as a new work." Although containing some sixty additional pages, this edition is less bulky than its predecessor. It is probably the most comprehensive of existing manuals, and will no doubt command a large sale.

Messrs. George Bell and Sons have issued a new edition of Johnson's useful 'Gardeners' Dictionary,' the special feature of which is a revised supplement including all the new plants and varieties to the end of 1880, by Mr. N. E. Brown, of Kew. The volume now contains over a thousand pages, and is an extremely handy manual of reference for information connected with the history and management of garden plants. The supplement, of some 150 pages, may be had separately; an arrangement by which those who possess earlier editions will be able to bring their copies up to date at small cost.

Mr. George Roberts has published a volume of the 'Topography and Natural History of Lofthouse,' near Wakefield, which contains a 'Diary of Natural Phenomena' from 1862 to 1875 inclusive; and a short list of the rarer plants of the neighbourhood.

Mr. William Mathews has published, in a neat little pamphlet of less than sixty pages, a very useful account of 'The Flora of the Clent and Lickey Hills and neighbouring parts of the County of Worcester.' He begins with a sketch of the district, and of the literature of the subject, and then gives a list of the Flowering Plants and Ferns, with localities for the more interesting.

Baron F. Von Mueller sends us a very handy 'Census of the Genera of Plants hitherto known as indigenous to Australia.' It is a list of orders and genera, the authority, date, and place of publication being assigned to each, with the principal synonyms. It is unnecessary to say that such a list is very useful for reference; we think, however, that it was hardly necessary to cite pre-Linnean authorities, such as Tournefort and Dodoens. An index of genera would have added to the usefulness of the Census, as the sequence of orders adopted is not that usually followed. "Algs and Fungs" for Algæ and Fungi strikes us rather as novel than as ornamental or desirable.

Under the title 'Reliquiæ Rutenbergianæ' a series of papers has lately appeared in the 'Transactions' of the Natural History Society of Bremen on the plants collected by the late Dr. D. C. Rutenberg in 1877–8 in Central Madagascar. They are specially interesting to us, as he worked over the same ground as our recent English collectors (Kitching, Baron, Parker, and Cowan), and nearly all the species noticed are contained in the sets which they have recently forwarded.

In 'Vignettes from Nature' (Chatto & Windus), Mr. Grant Allen has given us a series of pleasantly written chapters on the phenomena connected with fertilisation and other points of interest in plant and animal life. Mr. Allen writes from the standpoint of an advanced evolutionist; and his theories, although quite satisfactory to himself, seem in some cases to demand more supporting evidence than they have as yet received. Referring to *Lychnis diurna* and *L. vespertina*, he says that "even the technical botanists, who never miss a chance of manufacturing a new species, where possible, admit that they are perhaps mere varieties of a single form"; but this is scarcely accurate, especially as even Mr. Bentham, with his large views of the limits of a species, retains the two as distinct. Why does Mr. Allen spell Stitchwort "Stichwort"?

Articles in Journals.—April.

Botanical Gazette.—C. H. Peck, 'New Species of Fungi.'—J. Troop, 'Proterandry in *Amaryllis Reginæ.*'

Botanisches Centralblatt.—C. Massalongo, '*Saxifraga Rocheliana* in Italy.'—A. Stelzner, Obituary Notice of P. G. Lorentz.—W. Zopf, 'On *Schizophyceæ.*'—T. Haberkorn, 'On *Bacteria.*'

Botanische Jahrbrücher.—F. Höck, 'On the Morphology, Arrangement, and Geographical Distribution of *Valerianaceæ.*'—F. Krasan, 'On the combined influence of warmth and light on the yearly period of Plants.'

Botanische Zeitung.—J. Klein, 'On *Vampyrella.*'—A. F. W. Schimper, 'On Insectivorous Plants' (*Sarracenia purpurea*, *Drosera*, *Utricularia cornuta*).

Botaniska Notiser.—A. P. Winslow, 'On Swedish Species of *Polygonum*' (*P. Persicaria* and allies).—O. Nordstedt, 'On *Algæ* from the Argentine Republic and Patagonia.'

Bulletin of Torrey Bot. Club.—(March), F. Wolle, 'Freshwater *Algæ*' (many new species; 1 plate).—M. S. Jones, 'New Californian

Plants' (*Trifolium multicaule, Grindelia pacifica, Oxytheca Reddingiana*).

Hedwigia.—(Feb.), C. Warnstorf, '*Bryum Kaurinianum*, n. sp.' —(March), P. A. Karsten, '*Hyponectria Queletii*, n. sp.'

Journal of Linnean Society (Botany, vol. xix., nos. 117–119).—J. E. T. Aitchison, 'On the Flora of the Kuram Valley, Afghanistan' (map, 30 plates).

Midland Naturalist.—W. B. Grove, 'On *Myxomycetes.*'—J. E. Bagnall, 'Flora of Warwickshire' (contd.).

Œsterr. Bot. Zeitschrift.—A. Heimerl, '*Rubus brachystemon*, n. sp.'—F. Hofmann, 'On the Flora of Bosnia' (contd.)—P. G. Strobl, 'Flora of Etna' (contd.)—P. Sintenis, 'On the Flora of Cyprus' (contd.)

Scottish Naturalist.—F. B. White, 'Preliminary List of Perthshire Plants' (contd.)—J. W, H. Trail, 'The Modes of Dispersion of Seeds of Scottish Plants.'—J. Cameron, 'Gaelic Names of Plants' (contd.)

Botanical News.

The death of Joseph Decaisne, which took place at Paris on the 8th of February, leaves an important gap in the list of French botanists. Born at Brussels on March 18th, 1809, he entered the Jardin des Plantes as a gardener at the age of eighteen, where his capabilities soon manifested themselves, and attracted the notice of Adrien de Jussieu, who showed him much friendship. On the resignation of Mirbel, in 1851, Decaisne succeeded him as Director of the establishment, a post which he filled until his death. He was a voluminous writer: among the more important of his works are the 'Jardin Fruitier' (1858–1873), the monographs of *Asclepiadaceæ* (1844) and *Plantagineæ* (1852) in the 'Prodromus,' and numerous papers in the 'Annales des Sciences Naturelles.' In conjunction with Naudin he produced the comprehensive 'Manuel de l'Amateur des Jardins' (1862–66), upon which Mr. Hemsley's 'Handbook of Hardy Trees' is based; and with Le Maout he brought out the very useful 'Traité Générale de Botanique' (1868), of which also an English edition, translated by Dr. Hooker, has appeared. A portrait of Decaisne, with some details of his work, will be found in the 'Gardeners' Chronicle' for 1871, p. 377.

Thomas Potts James died at Cambridge, Massachusetts, on the 22nd of February last. He was a leading bryologist, his first paper on Mosses having been published (in the Proceedings of the Philadelphia Academy of Natural Sciences) in 1854; and was at the time of his death engaged with Lesquereux upon a Manual of North American Mosses, which was nearly concluded. He had a good general knowledge of botany, and in 1869 edited, from Pursh's manuscripts, his Journal of a Botanical Excursion in Pennsylvania and New York. He was born at Radnor, near Philadelphia, on September 1st, 1803. He is described in Silliman's Journal for March as a "kindly, simple-hearted, devout gentleman, admirable in every relation of life."

Paul Gunther Lorentz was born in Kahla, in the Duchy of Sachsen-Altenburg, on August 30th, 1835. At an early age he showed a strong bent towards biological studies, and after a year spent with a Hamburg apothecary he returned home in 1852. After several years' preparation for the Church he submitted himself to the Consistory at Altenburg for examination, but here he took a new departure. During his career he had come into contact with Schleiden and Schnizlein, and had taken many scientific journeys into the Julian Alps and elsewhere. He now applied himself diligently to botanical study at Munich, became assistant to Naegeli, and took his Doctor's degree there in 1860. Devoting himself to Mosses, he published several papers on that branch, which are set forth in the memoir in the 'Botanisches Centralblatt' (see p. 157), from which this notice is mainly taken. In 1869 he accepted the Chair of Botany at Córdoba, in the Argentine Republic. In 1871 he started on an expedition into the interior, from which he returned, in 1872, richly laden. The phanerogams were sent to Grisebach, Lorentz only reserving the mosses and lichens for his own elaboration. He again set out in search of plants in the autumn of the same year, returning after sixteen months' absence; from this journey he sent two thousand plants to Grisebach, the lichens to Krempelhuber, and the *Hepaticæ* to Carl Mueller. He had not confined his attention to botany, but brought back with him two thousand specimens for the zoological museum at Cordoba. Dissatisfied with the state of things prevailing at the university, he began his lectures in 1874, with some short comments on the authorities, resulting in his dismissal from his post. Whilst planning another journey he was seized with smallpox; after his tedious recovery, being offered the Professorship of Natural Science at Concepcion, in Uruguay, he thankfully accepted it. He spent six years in this town, describing it as a life-in-death sort of existence, varied by an occasional excursion for plants. He died on October 6th, 1881, after three weeks' illness of inflammation of the liver. His principal works were 'Vegetations-Verhaeltniss der Argentinischen Republik' (1876), and 'La Vegetation del Nordeste de la prov. de Entre Rios' (1878), both published at Buenos Ayres: he also published numerous papers upon Mosses. Sets of his plants were issued.

Although at a somewhat late date, the death of Caroline Lady Wilkinson demands a word of record. She was born at Llandebie, Caermarthenshire, on May 10th, 1822, and was the daughter of Henry Lucas, Esq., of Uplands, Glamorganshire. In October, 1856, she married Sir Gardner Wilkinson, the well-known Egyptologist. In 1858 she published a little volume 'Weeds and Wild Flowers,' which is much in advance of most works of its kind. She also made a large collection of original drawings of the Fungi of the neighbourhood. At the time of her death, which took place on October 2nd, 1881, at Llandovery, Caermarthenshire, she was engaged in editing the work upon "The Desert Plants of Egypt," to which reference was made in this Journal for 1880 (p. 224), and which, it is hoped, will shortly be published.

We have only space to announce the death of Charles Darwin, which took place at Down, Kent, on the 19th ult.

Dr. H. Hoffmann and Dr. E. Ihne, of Giessen, who are engaged in preparing a map of the plant-phænology of Europe, are desirous of obtaining accurate dates of the flowering and fruiting of the undermentioned plants in this country from as many localities as possible. The observations are to be made (on isolated trees, not protected by walls, nor trained in espalier) during the present year, or from previous years, if not already published. An example of the work intended may be seen in a map published in Petermann's 'Geographische Mittheilungen' for January, 1881, entitled "Vergleichende phænologische Karte von Mittel-Europa.' The dates are the average observed at Giessen.

A. *First flowers open.*

*1.	*Ribes rubrum*	April	14
2.	*Prunus avium*	,,	19
*3.	*P. spinosa*	,,	20
4.	*P. Padus*	,,	24
6.	*Pyrus communis*	,,	23
7.	*P. Malus*	,,	28
*8.	*Syringa vulgaris*	May	4
9.	*Lonicera tatarica*	,,	4
10.	*Narcissus poeticus*	,,	5
*11.	*Æsculus Hippocastanum*	,,	7
12.	*Cratægus Oxyacantha*	,,	9
13.	*Cytisus Laburnum*	May	15
14.	*Sarothamnus scoparius*	,,	14
15.	*Cydonia vulgaris*	,,	16
16.	*Pyrus Aucuparia*	,,	17
*17.	*Sambucus nigra*	,,	28
18.	*Secale cereale*	,,	28
19.	*Atropa Belladonna*	,,	29
20.	*Vitis vinifera*	June	15
21.	*Tilia grandifolia*	,,	22
*22.	*Lilium candidum*	July	1

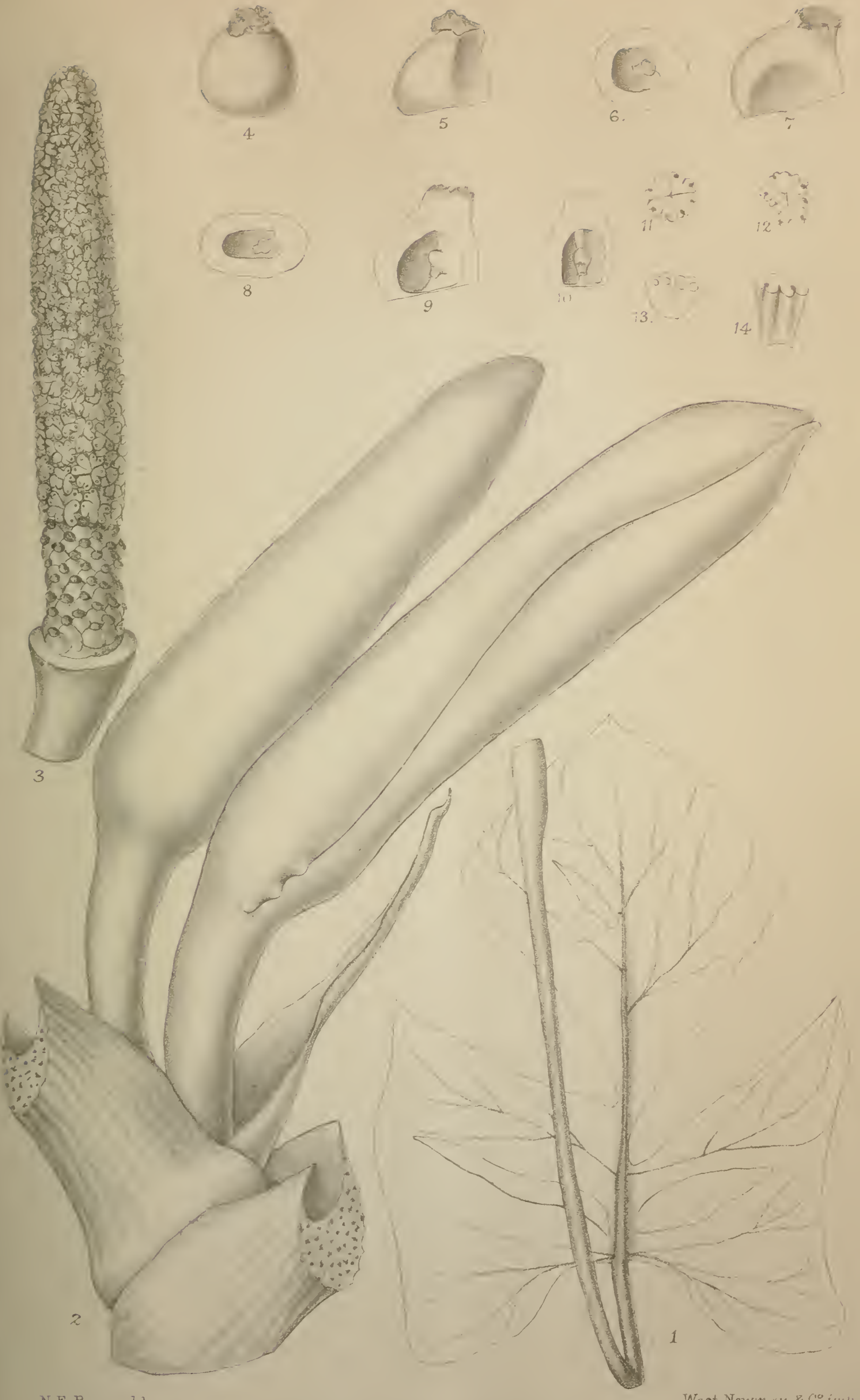
B. *First fruit ripe.*

23.	*Ribes rubrum*	June	21
24.	*Lonicera tatarica*	July	1
25.	*Pyrus Aucuparia*	,,	30
26.	*Atropa Belladonna*	Aug.	2
*27.	*Sambucus nigra*	Aug.	11
28.	*Æsculus Hippocastanum*	Sept.	17

Particular attention is requested to the species indicated by an asterisk. Communications to be addressed to Dr. Ihne, Giessen, Germany.

Our readers will be glad to learn that Mr. Townsend's long-expected Flora of Hampshire is in the printer's hands. Messrs. Lovell Reeve & Co. will publish the work, the price of which to subscribers will be 10*s.* 6*d.*

Dr. E. V. Ekstrand proposes to undertake an excursion during June, to investigate botanically certain parts of Lapland. He will issue two sets of the plants collected by him, one of phanerogams, the other of mosses, the cost of each being £3. Intending subscribers should write to Dr. Ekstrand, Upsala.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N. E. Brown del.
R. Morgan lith.
West, Newman & Co imp.

Rhektophyllum mirabile.

Original Articles.

PLANTS FLOWERING IN JANUARY AND FEBRUARY, 1882.

By the Rev. T. A. Preston, M.A., F.L.S.

Having been supplied, through the kindness of some observers, with lists of all plants observed in flower at Trusham and Tiverton in Devonshire, Yeovil in Somerset, Isleworth in Middlesex, Croydon in Surrey, Wickham in Essex, and Oxford, as well as a few from Wells, Killarney, and Salisbury, they have been united with our own observations at Marlborough, and the list thus completed presents some interesting features. It will be seen that, though 58 is the greatest number observed at any one place, the total number of species observed is over 130, a most remarkable number.

Not having any observations in former years from any place but Marlborough, the following remarks must refer only to our own records, which have been kept for seventeen years. Of the fifty species found here, about twenty-eight are not remarkably unusual for this time of year, as all have, in some previous January, been found in flower; but it *is* extraordinary to have them all out at once. Seven others have never before, as far as we know, been found here in January; they are—*Ranunculus auricomus*, *Galium Aparine*, *Sherardia arvensis*, *Nepeta Glechoma*, *Myosotis arvensis*, *Dactylis glomerata*, and *Lolium perenne*.

In addition to these "survivals" must be added sixteen species which have commenced their flowering; and here again most have been found at an earlier date than they were this year, but their being all out together is especially worthy of note.

Appended in parentheses are the number of days they are this year before the mean date of the previous seventeen years:—1. *Ranunculus Ficaria* (40). 2. *Caltha palustris* (43). 3. *Helleborus viridis* (36). 4. *Cardamine hirsuta* (34). 5. *Draba verna* (48). 6. *Potentilla Fragariastrum*. 7. *Chærophyllum sylvestre*. 8. *Petasites vulgaris* (39). 9. *Vinca minor* (45). 10. *Veronica hederæfolia*. 11. *Daphne Laureola* (24). 12. *Mercurialis perennis* (48). 13. *Corylus Avellana* (16). 14. *Taxus baccata* (24). 15. *Galanthus nivalis* (13). 16. *Ruscus aculeatus*.

Nos. 6 and 10 began to flower as early as October last year; 7, though not unfrequent, cannot be said to have begun its regular flowering; and 16 varies so much in its time of flowering that no satisfactory "mean date" can be given.

Besides the above may be mentioned the following cultivated species:—*Eranthis hyemalis* (16). Hepatica (17). Crocus (32).

Cornus Mas (18). *Scilla sibirica* (34). *Daphne Mezereum* (25). The Laurustinus began to flower as early as Nov. 20, and the *Pyrus japonica* as early as Nov. 23, both keeping well in flower up to the present time.

It is curious that the Sweet Violet and Coltsfoot (*Tussilago Farfara*)* do not appear among the January flowers this year. They are generally very early.

I have added a similar table for February, as there are several additions; besides the species which came into flower, some others were found which *probably* had been vigorous in January, but had escaped notice.

Observers:—Trusham, Rev. W. Moyle Rogers; Tiverton, Miss M. E. Gill; Westward Ho, Mr. H. A. Evans; Yeovil, Rev. J. Sowerby; Isleworth, Miss E. A. Ormerod; Croydon, Mr. W. F. Miller; Oxford, Mr. W. M. H. Milner; Cambridge and Wickham, Mr. H. N. Dixon; Geldeston (Norfolk), Miss S. S. Dowson. Oscott, Mr. J. Caswell (from the 'Midland Naturalist'); Wells, Miss Livett; Killarney, Rev. G. R. Wynne; Salisbury, Mr. W. Hussey.

January, 1882.

Ranunculus acris.—Yeo.
R. repens.—Tru., Tiv., Yeo., Marlb., Islew., Croyd., Wick., Ox., Osc.
R. bulbosus.—Croyd., Wick.
R. Ficaria.—Tru., Tiv., Yeo., Marlb., Wick., Ox., Osc.
Caltha palustris.—Yeo., Marlb.
Helleborus viridis.—Yeo., Marlb.
H. fœtidus.—Osc.
Fumaria confusa.—Tru.
F. officinalis.—Tiv., Croyd., Wick., Osc.
Raphanus Raphanistrum.—Islew., Ox.
Sinapis arvensis.—Tru., Yeo., Marlb., Islew., Croyd., Ox., Osc.
S. alba.—Islew.
Brassica oleracea.—Ox.
[*Brassica Rapa*].—Marlb.
Sisymbrium officinale.—Tru., Wick., Osc.
S. Alliaria.—Tiv.
Cardamine hirsuta.—Tru., Tiv., Yeo., Marlb., Wick, Osc.
C. sylvatica.—Yeo.
Arabis thaliana.—Tru., Yeo., Ox., Osc.
Draba verna.—Yeo., Marlb., Islew., Ox., Osc.
Capsella Bursa-pastoris. — Tru., Tiv., Yeo., Marlb., Croyd., Wick., Ox., Osc.
Lepidium Smithii.—Tru.
[*Reseda alba*].—Wick.
Viola odorata.—Tru., Tiv., Yeo.
,, var. *alba.*—Tiv.
V. Reichenbachiana.—Wells & Salisbury
V. arvensis.—Yeo., Marl., Croy., Ox., Osc.
Lychnis diurna. — Tru., Tiv., Yeo., Wick., Wells.
L. vespertina.—Osc.
Cerastium semidecandrum.—Tiv.
C. glomeratum.—Yeo., Osc.
C. triviale.—Tru., Yeo., Marlb., Croyd., Wick., Ox., Osc.
Stellaria media. — Tru., Tiv., Yeo., Marlb., Islew., Croyd., Wick., Ox.
S. Holostea.—Tru., Tiv., Yeo.
Arenaria trinervia.—Tru., Tiv., Yeo.
A. serpyllifolia.—Yeo., Marlb., Croyd., Wick., Ox.
A. leptoclados.—Tru.
Sagina apetala.—Tiv.
S. procumbens.—Osc.
Spergula arvensis.—Croyd., Wick., Ox., Osc.
Scleranthus annuus.—Wick., Ox., Osc.
Geranium molle.—Tru., Yeo., Wick., Osc.
G. dissectum.—Croyd.
G. columbinum.—Tru.
G. Robertianum.—Tru., Tiv., Ox.
Erodium cicutarium.—Croyd., Ox.
E. moschatum.—Yeo.
Oxalis corniculata.—Tru.
Ilex Aquifolium.—Wick.
Ulex europæus.—Tru., Tiv, Yeo., Marlb, Islew., Croyd., Wick., Ox., Osc.
Medicago denticulata.—Yeo.
Vicia hirsuta.—Tiv., Osc.
V. sepium.—Tiv., Yeo.
Prunus spinosa.—Kil.
Poterium Sanguisorba.—Croyd.
Potentilla Fragariastrum.—Tru., Tiv., Yeo., Marlb., Croyd., Ox.
P. reptans.—Tiv.

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* [The Coltsfoot is recorded as flowering this year near Lewisham on Jan. 6 ('Nature,' xxv., p. 241), and "on the south coast" before Jan. 23 (*Ib.*, p. 290).—Ed. Journ. Bot.]

Fragaria vesca.—Tru., Tiv., Yeo., Croyd., Wells.
Alchemilla arvensis.—Osc.
Rubus discolor?—Croyd., Wick., Osc.
Geum urbanum.—Tiv., Marlb., Islew., Croyd., Wick.
Saxifraga tridactylites.—Yeo.
Chrysosplenium oppositifolium.—Yeo.
Pimpinella Saxifraga.—Tru., Yeo., Marlb.
Æthusa Cynapium.—Wick.
Pastinaca sativa.—Marlb., Salisbury.
Heracleum Sphondylium.—Tru., Tiv., Yeo., Ox., Osc.
Daucus Carota.—Tiv.
Torilis Anthriscus.—Yeo.
Chærophyllum sylvestre.—Marlb. Croyd.
C. temulum.—Tru.
Scandix Pecten.—Tiv., Yeo., Marlb., Croyd.
Hedera Helix.—Croyd., Wick.
Cornus sanguinea.—Croyd.
Galium Aparine.—Tiv., Marlb.
Sherardia arvensis.—Tru., Yeo., Marlb., Croyd., Osc.
Dipsacus sylvestris.—Ox.
Carduus nutans.—Osc.
Chrysanthemum segetum.—Ox.
C. Leucanthemum.—Tiv.
Matricaria Parthenium.—Wick., Osc.
M. inodora.—Tiv., Yeo., Marlb., Croyd., Wick., Ox., Osc.
M. Chamomilla.—Wick.
Anthemis Cotula.—Yeo.
A. arvensis.—Tru.
Achillea Millefolium.—Tiv., Marlb., Wick., Ox.
Senecio vulgaris.—Tru., Tiv., Yeo., Marlb., Islew., Croyd., Wick., Ox., Osc.
S. Jacobæa.—Tru., Tiv.
S. squalidus.—Ox.
Bellis perennis.—Tru., Tiv., Yeo., Marlb., Islew., Croyd., Wick., Ox., Osc.
Petasites vulgaris.—Marlb. (*P. fragrans* at Tiverton and Killarney).
Lapsana communis.—Tiv., Osc.
Hypochœris radicata.—Tiv.
Taraxacum officinale.—Tru., Tiv., Yeo., Marlb., Islew., Croyd., Wick., Ox., Osc.
Sonchus oleraceus.—Tru., Tiv., Yeo., Croyd., Wick., Osc.
S. asper.—Yeo.
Crepis virens.—Tru., Yeo., Croyd., Ox.
Lactuca muralis.—Osc.
Hieracium Pilosella.—Croyd.
H. sylvaticum.—Osc.
Vinca major.—Tru.
V. minor.—Tru., Tiv., Yeo., Marlb.
Calluna vulgaris.—Osc.
Linaria Cymbalaria.—Tru., Tiv., Wick.
Veronica hederæfolia.—Tru., Tiv., Yeo., Marlb., Croyd., Wick., Ox., Osc.
V. polita.—Tru., Yeo., Marlb., Islew., Croyd., Ox.
V. agrestis.—Tiv., Yeo., Islew., Croyd., Wick., Osc.
V. Buxbaumii.—Tru., Tiv., Yeo., Marlb., Islew., Croyd., Ox., Osc.
V. arvensis.—Tiv., Marlb., Croyd., Ox.
V. serpyllifolia.—Islew.
V. Chamædrys.—Tru., Tiv., Kil.
Nepeta Glechoma.—Marlb., Kil.
Stachys arvensis.—Tru.
Lamium [*maculatum*].—Yeo.
L. amplexicaule.—Tru., Marlb., Islew., Croyd.. Osc.
L. purpureum.—Tru., Tiv., Yeo., Marlb., Islew., Croyd., Wick., Ox., Osc.
L. album.—Tru., Tiv., Yeo., Marlb., Islew., Croyd., Wick., Ox., Osc.
L. Galeobdolon.—Tiv.
Teucrium Scorodonia.—Tru., Wick.
Echium vulgare.—Croyd.
Lithospermum arvense.—Ox.
Myosotis arvensis.—Marlb., Croyd.
M. collina.—Osc.
Primula vulgaris.—Tru., Tiv., Yeo., Marlb., Wick., Ox., Osc.
Rumex obtusifolius.—Tiv., Osc.
Polygonum aviculare.—Tiv.
Daphne Laureola.—Yeo., Marlb., Ox.
Euphorbia Helioscopia.—Marlb., Islew., Croyd., Wick., Ox., Osc.
E. Peplus.—Tru., Tiv., Marlb., Islew., Croyd., Wick., Ox., Osc.
E. exigua.—Tru.
Mercurialis perennis.—Tiv., Yeo., Marlb., Croyd., Wick., Ox.
Urtica urens.—Yeo., Croyd., Wick., Ox., Osc.
Corylus Avellana.—Tru., Tiv., Yeo., Marlb., Islew., Croyd., Wick., Ox., Osc.
Alnus glutinosa.—Ox., Osc.
Salix cinerea.—Tru.
Taxus baccata.—Marlb.
Galanthus nivalis.—Tru., Tiv., Yeo., Marlb., Wick., Ox., Osc.
Ruscus aculeatus.—Marlb., Wick.
Alopecurus agrestis.—Yeo., Wick.
Avena flavescens.—Wick.
A. elatior.—Wick.
Poa annua.—Tru., Tiv., Yeo., Marlb. Croyd., Wick., Ox.
P. nemoralis.—Tru.
Dactylis glomerata.—Marlb.
Bromus sterilis.—Tru.
Brachypodium sylvaticum.—Yeo.
Lolium perenne.—Marlb.

Summary:—Tru., 55; Tiv., 53; Yeo., 58; Marlb., 50; Islew., 21; Croyd., 46; Wick., 47; Ox., 45; Oscott, 51.

February, 1882.

Anemone nemorosa.—Marlb., Ox., Kil.
Ranunculus floribundus.—Yeo.
R. auricomus.—Marlb.
R. repens.—W. Ho, Yeo., Marlb., Ox., Camb., Geld.
R. bulbosus.—Marlb., Ox., Camb.
R. Ficaria. —Tiv., W. Ho, Yeo., Marlb., Islew., Ox., Camb., Geld.
Caltha palustris.—Yeo., Marlb., Ox.
Helleborus viridis.—Yeo., Marlb.
Fumaria confusa.—W. Ho.
F. officinalis.—Tiv., Marlb.
F. capreolata.—Kil.
Raphanus Raphanistrum.—Ox.
Sinapis arvensis.—W. Ho, Yeo., Marlb., Islew., Ox.
Brassica Rapa.—Yeo., Marlb., Ox.
Sisymbrium officinale.—Camb.
S. Alliaria.—Tiv.
Cardamine hirsuta.—Tiv., W. Ho, Yeo., Marlb., Ox.
Arabis thaliana.—Yeo., Ox., Geld.
Draba verna.—W. Ho, Yeo., Marlb., Islew., Ox., Camb., Geld.
Capsella Bursa-pastoris.—Tiv., W. Ho, Yeo., Marlb., Islew., Ox., Camb., Geld.
Lepidium Smithii.—W. Ho.
Cochlearia danica.—W. Ho.
Senebiera Coronopus.—Camb.
Viola odorata. — Tiv., W. Ho, Yeo, Marlb., Ox., Camb.
V. Riviniana.—W. Ho, Yeo.
V. arvensis.—Yeo., Marlb., Ox.
Lychnis diurna.—Tiv., W. Ho, Yeo., Islew.
Cerastium tetrandrum.—W. Ho.
C. semidecandrum.—Tiv., Yeo.
C. glomeratum.—Yeo., Ox.
C. triviale.—W. Ho, Yeo., Marlb., Ox., Camb.
Stellaria media.—Tiv., W. Ho, Yeo., Marlb., Islew., Ox., Camb., Geld.
S. Holostea.—Tiv., W. Ho, Yeo.
S. graminea.—Tiv.
Arenaria trinervia.—Tiv., Yeo.
A. serpyllifolia.—Yeo., Marlb., Ox.
Sagina apetala.—Tiv.
Geranium molle.—W. Ho, Camb.
G. Robertianum.—Tiv., W. Ho, Ox., Kil.
Erodium moschatum.—Yeo.
Ulex europæus.—Tiv., W. Ho, Yeo., Marlb., Islew., Ox., Camb., Geld.
Anthyllis Vulneraria.—Camb.
Vicia angustifolia.—Tiv.
Prunus spinosa.—Marlb.
Alchemilla arvensis.—Marlb.
Potentilla Fragariastrum. — Tiv., W. Ho, Yeo., Marlb., Ox., Geld.
P. reptans.—W. Ho.
Fragaria vesca.—Tiv., W. Ho, Yeo., Ox., Kil.
Geum urbanum.—Tiv., Yeo., Marlb., Camb., Kil.
Saxifraga tridactylites.— Tiv., W. Ho., Kil.
Chrysosplenium oppositifolium.—Tiv., W. Ho, Yeo., Kil.
Æthusa Cynapium.—Marlb.
Pastinaca sativa.—Camb.
Heracleum Sphondylium.—Tiv., Yeo.
Chærophyllum sylvestre.—Marlb., Ox., Camb.
Scandix Pecten.—Marlb., Ox., Camb.
Adoxa Moschatellina. — W. Ho, Yeo., Marlb., Ox.
Galium Aparine.—Marlb.
Sherardia arvensis. — W. Ho, Yeo., Marlb., Kil.
Carduus crispus.—Ox.
Chrysanthemum segetum.—Yeo.
C. Leucanthemum.—Tiv.
Matricaria inodora.—Tiv., Marlb., Ox.
M. Chamomilla.—Geld.
Achillea Millefolium.—Marlb.
Senecio vulgaris.—Tiv., W. Ho, Yeo, Marlb., Islew., Ox., Camb., Geld.
S. viscosus.—Ox.
S. Jacobæa.—Tiv., Camb.
Bellis perennis —Tiv., W. Ho, Yeo., Marlb., Islew., Ox., Camb., Geld.
Tussilago Farfara.—Tiv., W. Ho, Yeo., Marlb., Islew., Ox., Camb., Kil.
Petasites vulgaris.—Tiv., Yeo., Marlb.
Lapsana communis.—Tiv.
Taraxacum officinale. — Tiv., W. Ho, Yeo., Marlb., Islew., Ox., Camb., Geld.
Sonchus asper.—W. Ho.
Crepis virens.—W. Ho, Yeo., Ox., Camb.
Vinca minor.—W. Ho, Yeo., Marlb., Ox., Camb.
Linaria Cymbalaria.—Tiv., Marlb., Kil.
Veronica hederæfolia.—Tiv., W. Ho, Yeo., Marlb., Islew., Ox., Camb., Geld.
V. polita.—W. Ho, Yeo., Marlb., Islew., Ox.
V. agrestis.—Tiv., Islew., Ox., Camb.
V. Buxbaumii. — Tiv., Yeo., Marlb., Islew., Geld.
V. arvensis.—Tiv., Yeo., Marlb., Kil.
V. serpyllifolia.—Marlb.
V. Chamædrys.—Tiv.
Nepeta Glechoma.—W. Ho.
Stachys arvensis.—W. Ho.
Lamium amplexicaule.—Yeo., Marlb., Islew.
L. incisum.—Yeo., Ox.
L. purpureum.—Tiv., W. Ho, Yeo., Marlb., Islew., Ox., Camb., Geld.
L. album.—Tiv., Yeo., Marlb., Islew., Ox., Camb., Geld.
L. Galeobdolon.—Tiv.

[*L. maculatum.*]—Yeo.
Myosotis arvensis.—Marlb.
M. collina.—Yeo., Ox.
Anchusa arvensis.—Geld.
Primula vulgaris.—Tiv., W. Ho, Yeo., Marlb., Islew., Ox., Geld.
Lysimachia nemorum.—Kil.
Daphne Laureola.—Yeo., Marlb., Islew.
Buxus sempervirens.—Marlb.
Euphorbia Helioscopia.—Tiv., Marlb., Islew., Ox., Camb., Kil.
E. Peplus.—Marlb., Islew., Ox., Camb.
Mercurialis perennis.—Tiv., W. Ho, Yeo., Marlb., Ox., Camb., Geld.
Urtica urens.—Yeo., Ox.
Ulmus suberosa.—Tiv., W. Ho, Yeo., Marlb., Islew., Ox., Camb.
U. montana.—Yeo., Marlb., Ox., Kil.
Corylus Avellana.—Tiv., W. Ho, Yeo., Marlb., Islew., Ox., Camb., Geld.
Alnus glutinosa.—Tiv., Yeo., Camb., Kil.
Populus canescens.—Tiv., Islew.
P. alba.—Tiv.
P. tremula.—Camb.
P. nigra.—Yeo., Marlb., Ox.
Salix viminalis?—Tiv., Yeo., Marlb., Kil.
S. Caprea.—Tiv., Yeo., Ox.
Taxus baccata.—Yeo., Marlb., Islew., Ox., Geld.
Narcissus Pseudo-narcissus.—Tiv., W. Ho, Yeo., Marlb.
Galanthus nivalis.—Tiv., W. Ho, Marlb., Ox.
Ruscus aculeatus.—Marlb.
Poa annua.—Tiv., W. Ho, Yeo., Marlb., Ox., Camb.
Dactylis glomerata.—Camb.
Bromus sterilis.—Ox.
Hordeum murinum.—Camb.

Summary:—Tiv., 53; W. Ho, 45; Yeo., 63; Marlb., 63; Islew., 26; Ox., 55; Camb., 38; Geld., 21.

CHARLES DARWIN.

By Alfred W. Bennett, M.A., B.Sc., F.L.S.

Charles Robert Darwin (whose death was announced on p. 160) was born at Shrewsbury in 1809, and sprang from two distinguished grandparents,—Erasmus Darwin, the author of 'Zoonomia,' and Wedgwood, of pottery renown. His father was an eminent and successful medical man; and his two sons, George and Francis, enjoy the perhaps unique distinction of being the fourth generation in direct descent who have been elected Fellows of the Royal Society. Darwin was educated at the Shrewsbury Grammar School, and at Cambridge, where he took his degree in 1831. The ancestral love of natural science very soon showed itself; and in the year of his degree he accepted a proposal from Captain (afterwards Admiral) Fitzroy to accompany him as naturalist in his voyage round the world in the 'Beagle.' Darwin's first published work was his 'Naturalist's Voyage Round the World' (1839), a narrative of the scientific results of this expedition; followed in the course of a few years by 'The Structure and Distribution of Coral Reefs' (1844), 'Geological Observations on Volcanic Islands' (1842), 'Geological Observations on South America' (1846), and a 'Monograph of the Cirripedia' (1851–54); the last published by the Ray Society. These works, extending as they do over several branches of Science, at once attracted the attention of older naturalists. In particular the close and keen observation of Nature exhibited in the narrative of his expedition, the clearness and cogency of argument in the exposition of his views as to the mode of formation of coral-reefs, and the mastery of details of structure, and of the principles of classification displayed in his 'Monograph of the Cirripedia,' clearly showed that he was possessed of no ordinary powers of observation and of thought. The philosophic caution, which was perhaps the most conspicuous feature of Mr. Darwin's character, is shown by the fact that, although the views which he afterwards promulgated with regard to the 'Origin of Species' dawned upon him, and impressed his mind with ever-increasing force, while arranging the materials brought home from the 'Beagle,' it was not till 1859, when he was fifty years old, that he first brought them publicly before the world. The rapidity with which they were adopted by the leading naturalists was no doubt due in large measure to this maturity, so different from the rashness of the self-confident speculator. During the last forty years of his life Darwin led the life of a country gentleman amidst the chalk-hills of Kent, prompted thereto partly by his love of the country and the natural bent of his disposition, partly by the state of his health, which had suffered greatly and permanently from the 'Beagle' voyage; rarely seen in public or at any but the houses of his most intimate friends, but maintaining a most active correspondence with his fellow-naturalists in all parts of the world, and always ready with kindly words of sympathy and encouragement for those younger workers who wrote to him for advice or information. To all these his death is the loss of a valued and honoured friend. What must it be to those who have been closely and intimately associated with him during all these years?

Not only the practical work, but the literary activity of Darwin's retirement was amazing; and as all his later works, with the exception of 'The Descent of Man' (1871), 'The Emotions in Man and the Lower Animals' (1872), and the last, 'On Vegetable Mould and Earth-worms' (1881), bore more or less directly on botanical science, we will refer to them a little more in detail.

The name of Darwin will be associated for all time with the theories of Evolution and Natural Selection, the general acceptance of which by naturalists has wrought such a revolution in the mode of studying natural science. The exposition and illustration of these laws, applying as they do to both the animal and vegetable kingdom, will be found in his 'Origin of Species by means of Natural Selection' (1859) and the 'Variation of Animals and Plants under Domestication' (2 vols., 1868). While, however, he is distinctly of opinion that all existing species of animals and plants are descended from at most a very few ancestral forms, Mr. Darwin clearly states his view, both in earlier and later editions of the former of these works, that "natural selection," although the main, has "not been the exclusive means of modification." The laws of inheritance are thus summarised in the latter work:—"Firstly, a tendency in every character, new and old, to be transmitted, by seminal and bud generation, though often counteracted by various known and unknown causes. Secondly, reversion or atavism, which depends on transmission and development being distinct powers; it acts in various degrees and manners through both seminal and bud generation. Thirdly, prepotency of transmission, which may be confined to one sex, or be common to both sexes of the prepotent form. Fourthly, transmission limited by sex, generally to the same sex in which the inherited character first appeared. Fifthly, inheritance at corresponding periods of life, with some tendency to the earlier development of inherited character."

The phenomena connected with fertilisation are discussed chiefly in 'The various Contrivances by which Orchids are fertilised by Insects' (1862), 'The Effects of Cross and Self Fertilisation in the Vegetable Kingdom' (1876), and 'The Different Forms of Flowers on Plants of the same Species' (1877). The chief result of Mr. Darwin's observations is, as is well known, the conclusion that while self-fertilisation is, in most cases, possible, there is invariably provision either for habitual or for occasional self-fertilisation, without which the race would gradually and surely deteriorate: "Nature telling us," says Mr. Darwin, "in the most emphatic manner, that she abhors perpetual cross-fertilisation." In the family of *Orchidaceæ*, in particular, he points out that in certain species the pollen is not only inoperative, but is actually poisonous to the stigma of the same flower; and that in many the contrivances and adaptations for cross-fertilisation are of the most complex and beautiful nature. In the second of the three volumes, named above, Mr. Darwin advocates the view that this preference for cross-fertilisation is not the result of any inherent dislike of Nature to a union between near relatives; the advantage obtained by crossing "depends on the individuals which are crossed differing slightly in constitution, owing to their progenitors having been subjected during several generations to slightly different conditions, or to what we call in our ignorance spontaneous variation. This conclusion," Mr. Darwin says, "is closely connected with various important physiological problems, such as the benefit derived from slight changes in the conditions of life, and thus stands in the closest connection with life itself. It throws light on the origin of the two sexes, and on their separation or union in the same individual, and lastly on the whole subject of hybridism."

In the last-named work Mr. Darwin treats of cleistogamic flowers, which he regards as modified and degraded in order to afford an abundant supply of seeds with little expenditure. Species with cleistogamic flowers always produce also perfect flowers, so as to allow of occasional cross-fertilisation. Contrary to the opinion of some authorities, Mr. Darwin regards hermaphrodite as the primitive condition of flowers; unisexuality as a degraded type, in which, owing to changed conditions, the production of a great number of seeds has become superfluous; and an economy of vital powers is then introduced, resulting from the same flower not bearing both male and female organs.

The singular phenonema connected with the growth of climbing plants were the subject of a paper presented to the Linnean Society by Mr. Darwin in 1865. An immense mass of observations on this subject was contained in his 'Movements and Habits of Climbing Plants' (1875), which were extended to similar phenomena in the vegetable kingdom generally in the 'Power of Movement of Plants' (1880). This last volume, in which he was assisted by Mr. Francis Darwin, has been so recently published, and some of its conclusions are still exciting so much controversy, that only a brief reference to the leading results will be needful. Mr. Darwin shows that, so far from the power of apparently spontaneous movement being an exceptional phenomenon, every growing part of every plant is apparently continually circumnutating, though often on a small scale. Even the stems of seedlings, before they have broken through the ground, as well as their buried radicles, circumnutate, as far as the pressure of the surrounding earth permits. From this modified circumnutation, which is always present as long as growth lasts, and even continues after growth has ceased wherever there are pulvini, are derived all those movements due to hypnasty and epinasty, the revolving nutation of climbing plants, the nyctitropic or sleep-movements of leaves and cotyledons, and those excited by light and gravitation, heliotropism and geotropism. There are other movements, like those of the leaves of *Mimosa* and of the tentacles of *Drosera*, which cannot be traced to this law. Mr. Darwin has frequently pointed out, in the course of his writings, the strong resemblance which exists between some of these movements and those which characterise the lower animals. Speaking of the sensitiveness of the tips of radicles, he says:—"It is hardly an exaggeration to say that the tip of the radicle, thus endowed, and having the power of directing the movements of the adjoining parts, acts like the brain of one of the lower animals; the brain being seated within the anterior end of the body, receiving impressions from the sense-organs, and directing the several movements."

Mr. Darwin's 'Insectivorous Plants' (1875) is perhaps, more completely than any other of his works since the 'Origin of Species,' the text-book of the subject on which it treats. He here deals with the remarkable phenomenon of the aggregation of protoplasm in the tentacles of *Drosera*, and the extraordinary sensitiveness of these tentacles to contact with any nitrogenous substances in quantities so minute as to defy the most delicate chemical tests. And again, the points of contact between the animal and vegetable kingdoms are brought out in the power possessed by the *Droseraceæ* and other insectivorous plants of dissolving animal matter by the aid of a special secretion, which contains an acid, together with a ferment almost identical in nature with pepsin, by the aid of which a true process of digestion is carried on. The last of Mr. Darwin's writings, consisting of his papers presented to the Linnean Society so recently as March 16th of the present year, on "The Action of Carbonate of Ammonia on the Roots of Certain Plants," and on "The Action of Carbonate of Ammonia on Chlorophyll-Bodies" still further illustrate the phenomena of aggregation to which his attention was directed in these researches: an abstract of these is given in this number of the 'Journal of Botany.'

CONTRIBUTIONS TO THE FLORA OF CENTRAL MADAGASCAR.

By J. G. Baker, F.R.S.

(Continued from p. 140.)

Vernonia (Distephanus) scariosa, n. sp.—A shrub, with angled branchlets coated with brown tomentum. Leaves nearly sessile, oblanceolate or oblanceolate-oblong, 1½–2 in. long, ⅓–½ in. broad, acute, entire, or obscurely toothed, subcoriaceous, glabrous on both surfaces, triplinerved in the lower third, the veinlets prominent over both surfaces. Heads solitary, on short tomentose peduncles. Involucre campanulate, ½ in. diam.; bracts very numerous, linear, firm in texture, nearly black, tomentose on the back. Flowers 30–40 in a head. Achene 1–12th in. long, subterete, densely persistently pilose. Pappus of about 30 bright red persistent uniform bristles under ¼ in. long.—Central Madagascar, *Dr. Parker!* Gathered previously by Bojer. Native name *Kojejalahy*. A near ally of *D. capitatus* and *D. trinervis*, Bojer. There is a fourth species gathered in Central Madagascar by Bojer, Lyall, and Meller (*V. arbutifolia*, Baker), which is nearly allied to these three. It is marked by its crowded obovate cuneate rigid leaves not more than ½ in. long, not tomentose beneath, but lepidote principally on the upper surface, 1–3-nate sessile terminal 10–12-flowered heads, multiseriate involucre ¼ in. diam., with dark brown lanceolate rigid bracts with a fimbriated cobwebby margin, a pilose achene, with a bright red bristly pappus, the outer setæ of which are not more than a quarter as long as the inner. This is the plant mentioned in 'Genera Plant.,' vol. ii., p. 228, as connecting *Distephanus* and *Lepidaploa*.

Psiadia auriculata, n. sp.—Suffruticose, with almost woody multisulcate greenish brown branchlets clothed with short unequal flattened spreading white bristly hairs. Leaves alternate, distinctly petioled, with a pair of large suborbicular foliaceous auricles at the base of the petiole, which clasp the stem; blade oblong, acute, crenato-repand, 2–3 in. long, membranous, green and slightly pilose on both sides. Heads numerous, in terminal corymbs, on pilose pedicels ¼–¾ in. long. Involucre campanulate, ¼ in. diam.; bracts 2–3-seriate, subrigid, lanceolate, green, pilose. Flowers very numerous, the outer female ones furnished with minute yellow ligules ⅓–½ as long as the style. Achene cylindrical, glabrous, ½ lin. long, with 1–2 strong ribs on each face. Pappus ⅛ in. long, of about 20 uniform ciliated bristles. — Central Madagascar, *Dr. Parker!* Nearly allied to *Microglossa hispida*, DC., Prod. v. 321, which is referred by Bentham in Gen. Plant. to *Psiadia*.

Dichrocephala latifolia, DC.—A weed in the garden of the queen's palace at Antananarivo, *Dr. Parker!*—A frequent weed in cultivated fields of the Betsileo country, *Baron!*

Conyza bellidifolia, n. sp.—A perennial herb, with tufted simple erect pilose stems ½ ft. long. Leaves crowded towards the base of the stems, oblanceolate, obtuse, sessile, 2–3 in. long. ¾–1 in. broad, deeply crenate, membranous, bright green and obscurely pilose on both sides; upper distant, smaller, lanceolate, amplexicaul. Heads 3–6 in a lax or dense terminal corymb. Involucre campanulate, ¼ in. diam.; bracts 15–20, subbiserial, lanceolate, slightly pilose, green, with a broad pale or purple-tinted edge. Inner hermaphrodite flowers 5–6 to a head; the rest all female and filiform, Receptacle 1 lin. diam., convex, strongly tubercled. Achene ½ lin. long, clavate, pale brown, glabrous, not ribbed. Pappus of about 20 pure white uniform setæ ⅙ in. long.—Central Madagascar, *Dr. Parker!* Native name *Anampozavary*. Allied to the Canarian and Abyssinian *C. Gouani*, Willd., and the Japanese *C. japonica*, Less.

Helichrysum cordifolium, DC., var. *leucocephalum*, Baker.—Bracts of the involucre white, instead of bright brick-red, as in the typical form.—Central Madagascar, *Dr. Parker!* Native name *Fotsiavadika*.

HELICHRYSUM CONCRETUM, n. sp.—A shrub, with woody branches, densely clothed with short spreading grey hairs. Leaves crowded, oblanceolate, sessile, about ½ in. long, acute, entire, moderately firm in texture, flat, triplinerved, thinly matted above, densely pubescent beneath. Heads aggregated 4–8 together in globose clusters, which are enveloped in the lower half in a mass of brownish-white tomentum and arranged in dense terminal corymbs. Involucre cylindrical, ⅛ in. long, the portion that emerges from the tomentum consisting of 8–10 bright lemon-yellow glabrous obtuse oblanceolate caducous imbricated bracts. Flowers not more than 3 to an involucre, all funnel-shaped and hermaphrodite. Achene minute, brown, subcylindrical, glabrous. Pappus of about 20 uniform pure white bristles 1-12th in. long.—Central Madagascar, *Dr. Parker!*

SENECIO FAUJASIOIDES, n. sp.—A tree, with slender terete woody brown obscurely pilose branchlets. Leaves distant, alternate, petioled, oblong or ovate-oblong, obtuse, sharply dentate above the entire deltoid base, 1–1½ in. long, subcoriaceous, green and glabrous on both surfaces. Heads very numerous, arranged in an ample oblong panicle, with dense corymbose branches; pedicels very short, pubescent. Involucre cylindrical, glabrous, 1 lin. diam., 2 lin. long, equalling the tubular flowers; inner bracts 4, rigid, brown, glabrous and imbricated, and 3–4 minute ones at the base. Flowers about 10, the outer with minute yellow ligules. Achene slender, glabrous, ½ lin. long. Pappus ⅛ in. long, of very numerous pure white bristly hairs.—Forests of East Betsileo, *Baron* 226! Gathered previously by Dr. Lyall. Habit and capitula of the Mauritian *Faujasia flexuosa*, DC. The Madagascar plant referred to that species in my 'Flora of Mauritius' really belongs here.

SENECIO BETSILIENSIS, n. sp.—A tree, with woody slender terete purplish branchlets with a little white cottony tomentum. Leaves distant, alternate, distinctly petioled, oblong, acute, cuneate at the base, about an inch long, dentate, subcoriaceous, green or thinly cottony above, clothed with persistent white tomentum beneath. Heads in a dense terminal panicle 3–4 in. broad, with corymbose branches; pedicels elongated, thinly cottony, with minute linear bracts. Involucre $\frac{1}{8}$ in. long, campanulate, much shorter than the flowers; bracts 8–10, rigid, imbricated, brownish, lanceolate, slightly cottony. Ligules about 4, bright yellow, oblong. Tubular flowers about 15. Achene glabrous. Pappus $\frac{1}{6}$ in. long, composed of uniform pure white bristles of moderately firm texture.—Forests of the Betsileo country, *Baron* 209! A near ally of *S. adenodontus*, DC., Prod. vi. 378.

SENECIO ERECHTHITOIDES, n. sp.—A robust erect annual, with stout stems above a foot long, with a few short spreading crisped brown hairs. Leaves sessile, lanceolate, acute, 3–4 in. long, subglabrous, irregularly dentate, green on both sides, the upper amplexicaul and dilated at the base. Heads very numerous, arranged in a lax terminal corymbose panicle; pedicels slender, $\frac{1}{4}$–1 in. long; bracts minute, lanceolate. Involucre $\frac{1}{4}$ in. long, equalling the disk; bracts about 15, lanceolate, brown, slightly bristly, and several additional small ones at the base. Flowers about 50 in a head, the outer with very minute oblong yellow ligules. Achene very slender, 1-12th in. long, hispidulous, with 6–8 distinct ribs. Pappus of very numerous soft white hairs twice as long as the achene.—Betsileo country, flowering in December, *Baron* 42! Gathered also by Lyall. Habit of *Erechthites hieracifolia*.

SONCHUS PAUCIFLORUS, n. sp.—An acaulescent perennial, glabrous in all its parts, with a large fusiform root. Leaves all in a radical rosette, oblanceolate-oblong, obtuse, sessile, 3–4 in. long, an inch broad, slightly repand, copiously ciliato-denticulate, green and glabrous on both surfaces. Stems several to a root, wiry, under a foot long, branching low down, with only minute bracts at the forks. Heads few, arranged in lax terminal corymbs on long erect pedicels. Involucre cylindrical, biserial, $\frac{1}{2}$ in. long, $\frac{1}{8}$ in diam.; inner row of 4 lanceolate greenish brown imbricating glabrous bracts with a pale border; outer of about as many small unequal ovate bracts. Receptacle flat. Flowers about 6 to a head. Achene nearly $\frac{1}{4}$ in. long, subcylindrical, pale drab, glabrous. narrowed to the apex, with 10 distinct ribs. Pappus $\frac{1}{4}$ in. long, of very numerous soft white hairs.—Central Madagascar, *Dr. Parker!* Nearly allied to *S. rarifolius*, Oliver and Hiern, of Tropical Africa.

Wahlenbergia Bojeri, A. DC.—Central Madagascar, *Parker* 131! Common in the open country throughout Betsileo-land, flowering in December and January. Flower white, *Baron* 113!

Lobelia natalensis, A. DC.—Central Madagascar, *Dr. Parker!* Native name *Anandaingo*. Also a native of Zambesi-land and Natal.

PHILIPPIA PARKERI, n. sp.—A low shrub, with slender woody branches, densely clothed with spreading white bristles, some of which are tipped with a gland. Leaves in contiguous whorls of 3–4, spreading, sessile, falcate, oblanceolate, $\frac{1}{2}$ lin. long, grey-green, rugose, with revolute edges and gland-tipped bristles. Flowers 3–6 in terminal umbels; pedicels very short. Sepals 4, oblong-lanceolate, united at the base, densely bristly, $\frac{1}{2}$ lin. long. Corolla campanulate, pilose, not longer than the sepals, its erect lobes oblong. Anthers 8, dark brown, subquadrate, deeply emarginate, just projecting from the corolla, free, as long as the lanceolate filaments. Style much exserted, the stigmatic lobes lanceolate.—Central Madagascar, *Dr. Parker!* A near ally of *P. galioides* and *P. ramosissima*, Benth.

Anagallis tenuicaulis, n. sp.—An annual herb, glabrous in all its parts, with very slender trailing angular stems ½ ft. long. Leaves distant, opposite, oblong, sessile, entire, acute, ⅓–⅙ in. long. Flowers from the axils of the leaves nearly all down the stem so as to form a lax raceme; pedicels ⅙–⅓ in. long, finally patent. Sepals 5, lanceolate, acuminate, 1-12th in. long. Petals lanceolate, pinkish, twice as long as the sepals. Stamens as long as the calyx. Capsule globose, ⅛ in. diam., circumscissile below the middle. —Central Madagascar, *Baron* 240! Closely allied to *Micropyxis rubricaulis*, Duby, which is a true *Anagallis.*

Tachiadenus platypterus, n. sp.—A shrub, glabrous in all its parts, with slender terete woody green branches. Leaves longer than the internodes, opposite, decussate, oblong, obtuse, sessile, 1–1½ in. long, triplinerved, subcoriaceous, entire, green and glabrous on both surfaces. Flowers solitary, terminal. Calyx above an inch long, with 5 rigid green broad wings and 5 oblong obtuse segments half as long as the tube. Corolla blue, with a cylindrical tube exserted 2–3 in. from the calyx and a limb 1¾ in. diam. when expanded, with 5 oblong obtuse segments. Stamens a short space below the throat of the corolla-tube. Stigma just exserted from the corolla-tube.—Edge of woods in East Betsileo, flowering from September to April, *Baron* 218! A well-marked novelty, nearest *T. longiflorus*, Griseb., but differs from it by its broadly-winged calyx-tube, large oblong calyx-teeth, &c.

Chironia pubescens, n. sp.—A small shrub, with finely pubescent slender woody branches and leaves. Leaves distant, opposite, shortly petioled, ovate or oblong, ½–1 in. long, triplinerved, minutely cuspidate, moderately firm in texture, dull green and finely pubescent over both surfaces. Flowers few, solitary, on long pedicels from the end of the branches or uppermost fork or axils of the upper leaves. Sepals 5, lanceolate, glabrous, ⅛–⅙ in. long. Corolla yellow, with a tube as long as the calyx and 5 spreading lanceolate acute segments as long as the tube. Stamens inserted at the throat of the corolla-tube, less than half as long as the segments, the filament as long as the lanceolate non-contorted anther. Capsule ampullæform, rather longer than the calyx, tipped with the short persistent styles.—Tanala country; edge of the forest near the top of the great ridge, *Baron* 291!

Nuxia capitata, n. sp.—An erect shrub, 8–10 ft. high, glabrous on all its parts, with slender terete woody branchlets. Leaves opposite; petiole ½–¾ in.; blade oblong or oblanceolate-oblong, 2–3 in. long, inciso-crenate above the entire deltoid base, obtuse, copiously penninerved, subcoriaceous, green on both surfaces. Flowers in globose heads about ½ in. diam., arranged in terminal dichotomous cymes. Calyx sessile, oblong, glutinose, coriaceous, ⅛ in. long; teeth deltoid, permanently erect, ⅓–¼ as long as the tube, which is hairy all over inside. Corolla whitish, with a tube as long as the calyx and 4 spreading obovate or oblong-obtuse segments ½ as long as the tube. Stamens 4, inserted at the hairy throat of the corolla-tube; filaments rather longer than the corolla-segments, suberect; anther of two divaricated obtuse oblong cells. Style finally overlopping the stamens; stigma capitate.—Forests of West Betsileo, *Baron* 23! Gathered previously by Bojer and Lyall. A near ally of the widely-spread Cape and Tropical African *N. congesta*, R. Br.

Anthocleista madagascariensis, n. sp. — A good-sized tree, glabrous in all its parts, with stout terete branches, with very short internodes. Leaves with a short petiole, which is dilated at the base to clasp the stem; blade oblanceolate-oblong, entire, obtuse, about ½ ft. long, 2–3 in. broad, subcoriaceous, with fine immersed veins, green on both surfaces. Flowers in ample terminal flat-topped dichotomous cymes. Calyx infundibuliform, coriaceous, ½ in. long; lobes 4, suborbicular, decussate, permanently much imbricated, longer than the tube. Corolla an inch long, with a greenish tube obconic in the upper half and 10–12 violet oblong much imbricated segments. Filaments completely united in a ring ⅛ in. deep. Anthers lanceolate, nearly valvate, ⅙ in. long, Ovary globose, narrowed into a short deeply grooved style. Stigma capitate, obscurely 2-lobed. Fruit an indehiscent berry 1¼ in. long. —Forest at Ankafina, in the Betsileo country, flowering in January, *Baron* 73! Native name *Tendemilahy*. Nearly allied to *A. Vogelii*, Planch.; Hook. Fl. Nigrit. t. 43.

(To be continued.)

THE CITATION OF BOTANICAL AUTHORITIES.

By Prof. Asa Gray, M.D., F.R.S.

It is almost certain that Article 50 of the 'Laws of Botanical Nomenclature' has been applied in a manner which the promulgator could not have distinctly contemplated; and it seems probable that the rule will be reduced to a recommendation adverse to the taking up for use (as well as the synonymous citation already reprobated) of manuscript and garden names. While unpublished such names of course have no authority. When they come in a systematic botanist's way the question for him is, whether he shall make them authoritative by publishing them; and the subsequent question is, whether the published record shall be cited as it stands. In my opinion the answer to the first question should be left to the botanist's discretion and sense of propriety; and that the answer to the second, upon recognised principles, must be in the affirmative.

However that may be, there is a class of cases, by no means rare, to which a more direct obligation is attached, and with which the wording of Article 50 conflicts. A monographer sometimes communicates to the author or editor of a systematic work, or illustrated publication, a generic or specific name in advance of his own publication. Are such names, in subsequent citations, to be "individualised by the addition of the name of the author who publishes them, notwithstanding the contrary indication which he may have given?" Shall we not rather say that the namer was published through the agency of the author to show he made this contribution? Again, the elder DeCandolle, in the preface to the first volume of the 'Prodromus' and elsewhere, solicited contributions, engaged to publish them under the contributor's name, and uniformly did so, unless there was imperative reason to the contrary. With this understanding Nuttall, for example, contributed specimens with names of his new genera of *Umbelliferæ*, and DeCandolle published them for him. It is not conceivable that the later editor of the 'Prodromus' ever intended Art. 50 to operate "contrary to the indication" that his father had given.

The governing principle here applied—that of accurate citation of the record—goes against all loosely constructive publication, such as that of supposing that an author, in renaming a genus or restoring some overlooked name, has thereby published the names of species which he has not mentioned, and whose perhaps multifarious synonymy he has not adjusted.

The same principle should be controlling in a different case, which is also discussed in the article in your Journal for April. The first edition of the 'Hortus Kewensis' is properly cited as Ait. Hort. Kew., although the Banksian Herbarium confirms the tradition that it is scientifically the work of Solander. But there is no proper ground for recognising this in citations, so long as his name nowhere appears in the publication, although most of the new species are ticketed by him in the Herbarium as "Soland. MS." The same applies to Richard in his relation to Michaux's Flora, in respect to which even the Herbarium is also silent. It would equally govern the well-known contributions of Robert Brown to the second edition of the 'Hortus Kewensis,' notwithstanding their posthumous collection in Brown's works, except for their early and general recognition as Brown's (doubtless at his own instance) in standard systematic works.

NOTES ON MOUNTAIN PLANTS IN KERRY.

By H. C. Hart, B.A.

Baurtregaun, 2796 feet, is the highest point of the Caher Conree or Slieve Mish Mountains, a ridge lying between Tralee Bay and Castlemaine Harbour, and running north and south across the neck of the Dingle promontory, which rises farther west to 3126 feet at Brandon. The geological structure of these mountains is of sandstones and schists of the Old Red Sandstone period; beneath these, on the southern face, a series of Silurian fossiliferous limestones is exposed in several places.

I devoted a day to botanizing over this group, but from the time I was about 1000 feet above sea level, the rest of my exploration was done in blinding clouds of rain, so that I am uncertain whether I ever reached the highest point. The following observations were, however, carefully taken with an aneroid, and I believe I gave the upper cliffs, which look eastwards, a tolerably complete examination.

At 2650 feet.

Ranunculus acris, Linn.
Cochlearia officinalis, Linn.
Cardamine pratensis, Linn.
Cerastium triviale, Link.
Sedum anglicum, Huds.
Saxifraga Geum, Linn.
S. stellaris, Linn.
S. affinis, Don.
Scabiosa Succisa, Linn.
Solidago Virga-aurea, Linn.
Campanula rotundifolia, Linn.
Primula vulgaris, Huds.
Salix herbacea, Linn.
Carex flava, Linn.
Poa pratensis, Linn.
Lycopodium Selago, Linn.
Athyrium Filix-fœmina, Roth.
Cystopteris fragilis, Bernh.

At 2550 feet.

Viola sylvatica, Fr.
Oxalis Acetosella, Linn.
Potentilla Tormentilla, Nestl.
Sedum Rhodiola, DC.
Saxifraga umbrosa, Linn.
Chrysosplenium oppositifolium, L.
Galium saxatile, Linn.
Jasione montana, Linn.
Calluna vulgaris, Salisb.
Vaccinium Myrtillus, Linn.
Euphrasia officinalis, Linn.
Thymus Serpyllum, Linn.
Armeria maritima, Willd.
Rumex Acetosa, Linn.
R. Acetosella, Linn.
Luzula sylvatica, Bich.
Juncus squarrosus, Linn.
Agrostis vulgaris, With.
Aira flexuosa, Linn.
A. cæspitosa, Linn. (var. *alpina*).
Festuca duriuscula, Linn.
Polypodium vulgare, Linn.
Lastræa dilatata, Presl.
L. Filix-mas, Presl.
Hymenophyllum Wilsoni, Hook.

At 2509 feet.

Luzula multiflora, Lej.
Carex rigida, Good.
Eriophorum vaginatum, Linn.

At 2300 feet.

Valeriana officinalis, Linn.
Pedicularis sylvatica, Linn.
Pinguicula vulgaris, Linn.
Carex pilulifera, Linn.
Blechnum boreale, Sw.

At 2170 feet.

Erica cinerea, Linn.

Sugarloaf Mountain.—This is a conical, isolated peak, standing out conspicuously at the head of the Black Valley. It is separated from the Reeks by this valley and the valley of the Caragh, and lies about a mile south of Lake Currahmore, on the Reeks. It forms a splendid feature in the view from the surrounding points.

Its height is marked 2440 feet on the Ordnance Map. On it I noted—

Thalictrum minus, Linn.—From 900 to 1500 feet.
Sedum Rhodiola, DC.—Frequent.
Hieracium anglicum, Fries.—At 1500 feet and lower.
Solidago Virga-aurea, Linn.—At 2440 feet and lower.
Empetrum nigrum, Linn.—At 2440 feet and lower.
Salix herbacea, Linn.—At 1800 feet and lower.
Polypodium Phegopteris, Linn.—In a gully at about 900 feet, between Lough Reagh and the summit.

Cloon Lough.—The cliffs to the south of Lough Reagh, which is only separated by a marsh from Lough Cloon, are most rugged and superb. There is a cluster of peaks huddled together in grand confusion, frequently separated by inaccessible ravines and ending downwards in sheer precipices, which are still the breeding-place of the golden eagle. It was here, I believe that Mr. Andrews located the discovery of his remarkable saxifrage, *S. Andrewsii*, Harvey, which is now known to be a garden hybrid, *S. Guthriana*. I examined the accredited glen with great care, and found a luxuriant series of *S. Geum*, Linn., and *S. umbrosa*, Linn., including *S. elegans*, Mackay, and *S. hirsuta*, Linn. Here also, the beech fern, *Polypodium Phegopteris*, Linn., the "evergreen fern," *Lastræa æmula*, Brack., and both species of filmy fern, *Hymenophyllum Tunbridgense*, Sm., and *H. Wilsoni*, Hook., are plentiful. On the east shore of Cloon Lough I met with a few plants of *Lastræa Oreopteris*, Presl, which has not been previously recorded from Kerry. This day's botanizing was done in mist and rain, which rendered it, probably, less successful than it would otherwise have been.

ON *METZGERIA CONJUGATA*, Lindb.

By William West.

I wish to call the attention of hepaticologists to this species, as I suspect that it exists in herbaria labelled *M. furcata*. This is the more likely, as *M. furcata* and *M. pubescens* have till recently been regarded by many as the only British species, and these are readily distinguished by *facies* without a lens. Moreover, it is very few who have access to a description of *M. conjugata* and *M. linearis*, the two other British species; I have not read a description of either yet. Again, one is used to passing what is taken to be *M. furcata* as such without microscopical examination: at any rate, I must plead guilty in this respect previous to knowing how to distinguish *M. conjugata*. Somehow I happened to soak and examine a specimen of what I took to be robust *M. furcata;* its coarseness struck me, but the generally dense ciliation of the margin and nerve was noticed mostly. I sent it out to one or two correspondents as "*M. falcata* var. *ciliata?*" Mr. M. B. Slater, of Malton, at once replied that it was *M. conjugata*, and pointed out that it differed from *M. furcata* in being monoicous, by having recurved margins with double cilia, and by the much larger areolation. I at once examined all the packets I had left of *M. furcata* (having distributed many), and found that out of twelve packets of my West Riding gatherings only one was *M. furcata*, and singularly enough this was from Silurian rocks at Cantley Spout, near Sedbergh, *M. furcata* preferring trees, whilst *M. conjugata* usually occurs on rocks, especially near streams where there is soil and old mosses on the rocks, though not always, for I have collected it on trees. I have it associated with *Zieria julacea* and *Plagiothecium pulchellum* from the (Silurian) Howgill Fells at Dent; it occurs with *Neckera crispa* and *M. pubescens* on limestone (the latter plant I have only found on limestone: is it found in Britain on any other formation, or on trees ?)

I sent Mr. McAndrew, of New Galloway, a specimen of *M. conjugata*, and told him to re-examine specimens from his district. He at once sent specimens of *M. conjugata* (previously passed as *M. furcata*), saying that it occurred in plenty. It occurs plentifully near Ingleton, Dent, Sedbergh, and Baugh Fell in W. Yorks. I have also found it among a patch of *Hypnum hamulosum*, collected on Ben Laoigh by Mr. T. Rogers. In the London Catalogue it is put down for three provinces—7, 10, and 12; two more may be added—13 and 15—and I have no doubt that more still will be added at once if the purpose of this note be fulfilled, *viz.*, for botanists to examine their herbaria for this species, and for some one to examine the public herbaria in London and other places. I have just had a packet sent me labelled "*Metzgeria furcata*, Nees; on shaded rocks, Connecticut, U.S.A., March 24th, 1877, J. A. Allen," which consists entirely of *M. conjugata*.

Finally, for tyros in hepaticology like myself a description in these pages of *M. conjugata* and *M. linearis* would be a great help, so would descriptions of similar new plants, in order to turn the attention of field botanists to them.

Mr. Slater has sent me specimens of *M. conjugata* from Eskdale, N. Yorkshire, and says that Dr. Spruce gathered it in the moor-dales of N. Yorkshire so far back as 1841. I have fresh specimens from Ingleton lying by me, and they are pale yellow-green in colour, having a diagnostic *facies* of their own, enhanced by the profusion of flowers clearly visible to the unaided eye.

A CONTRIBUTION TOWARDS A FLORA OF THE TEIGN BASIN, S. DEVON.

By the Rev. W. Moyle Rogers, F.L.S.

(Continued from p. 136.)

Valerianella carinata, Lois.—Near Bovey Tracey, with *V. olitoria*, Mœnch.

V. Auricula, DC.—Ashton and Trusham; frequent in cultivated land, intermixed with the commoner *V. dentata*, Koch.

Carduus tenuiflorus, Curt.—Ashton and Trusham; in waste rocky spots, eight or nine miles from the nearest salt-water.

C. crispus, L.—Trusham; Chudleigh (Fl. Dev.); near Newton Abbot. Very rare.

[*C. pratensis*, Huds.—I have not myself met with this in the district; but I have one of several specimens gathered by the late Rev. H. Roberts on Bovey Heathfield, on some part of which it may probably still be found.]

Carlina vulgaris, L.—Ashton; Haldon; Canonteign Down. Locally abundant.

Arctium majus, Schkuhr.—Near Chudleigh Bridge. Only two or three plants. 1879, 1880, and 1881.

A. minus, Schkuhr, and *A. intermedium*, Lange.—I cannot distinguish these two segregates with certainty; but I believe both to be widely distributed through the district.

Serratula tinctoria, L.—Near Dunsford, *Briggs;* abundant in lanes to the east of Chudleigh; and on Knighton Heath. Remarkably local.

Centaurea nigra, L.—In this district the usual form of this common species is small rayed *decipiens*, or a plant nearer to it than to typical *nigra;* but about Moreton, and I think generally in the neighbourhood of the moor, stouter forms (usually rayless, and scarcely if at all distinguishable from typical *nigra*) become more frequent.

C. Cyanus, L.—Ashton and Trusham; an occasional and sometimes very abundant colonist in cultivated land.

Chrysanthemum segetum, L.—Near Dunsford Bridge; about Moreton; Hennock, fields near the Reservoir, in great quantity, 1880. Trusham; near Bovey Tracey. A colonist; usually in very small quantity.

Matricaria Parthenium, L.—Moreton; Hennock; Ashton; Trusham; Chudleigh (Fl. Dev.) A well-established and frequent denizen; usually on old walls or near houses.

M. Chamomilla, L.—Chudleigh, in a lane by a mill near "The Rocks;" with *Lepidium sativum*. One or two small weak plants, apparently not fruiting, 1880 and 1881. Evidently not native here, and not met with elsewhere in the district by me.

Tanacetum vulgare, L.—About Moreton (Fl. Dev.); Ashton; Hennock; Trusham; Chudleigh (Fl. Dev.); North Bovey (Fl. Dev.); Lustleigh. Rather local; but I think native in most of these stations.

Anthemis Cotula, L.—Moreton; Doddiscombsleigh; Ashton; Hennock; Trusham: Chudleigh. A frequent colonist in cultivated land.

A. arvensis, L.—Gidleigh, *Briggs;* Moreton; Christow and Canonteign Downs; Trusham; Newton Abbot. Common at Trusham and probably throughout the district, but I suppose only as a colonist.

A. nobilis, L.—Vale of the Bovey, near Beetor Bridge; Fernworthy, *Briggs;* on Knighton Heath; near Teignbridge.

Achillea Ptarmica, L.—About Moreton (Fl. Dev.); Christow;

Ashton; Trusham; Chudleigh (Fl. Dev.); Haldon; Bovey Tracey; Knighton Heath. Rather frequent.

Artemisia Absinthium, L.—Ashton and Trusham, in several spots. Denizen.

A. vulgaris, L., b. *coarctata*.—Chagford; near Moreton, *Briggs*. This, or a form very near it, seems commoner than the type in the district.

Filago minima, Fries.—Christow and Canonteign Downs; Trusham; Haldon; Heytor Down, *Briggs*.

Gnaphalium sylvaticum, L.—A single plant in an enclosure at Fernworthy; near Chagford (Rav. Fl.), by gravelly roadsides on a common, *Briggs;* Christow and Canonteign Downs, in and near enclosures in great quantity, October, 1881; Ashton, on the heath locally known as "Quiet Land," one plant, October, 1881. Mr. Briggs found this plant under the shelter of a furze bush, and we made a long but fruitless search for more. The land here shows no signs of having been broken up; but the grass between the bushes is usually kept close cropped by sheep. Very rare in the south-west. Although I can find no mention of this species in Fl. Dev., there is a specimen of it in the Jones Herbarium labelled "Chagford. From Rev. G. B. Warner, 1849."

Senecio sylvaticus, L.—Holly Street; Moreton; Canonteign Down; Ashton; Hennock; Trusham; Lustleigh; Bovey Tracey. Rather common.

S. erucifolius, L.—Trusham; Haldon; Chudleigh. Decidedly local, but fairly abundant where it occurs.

Bidens cernua, L.—Teigngrace, 1879, *Briggs;* and 1880; a good many plants, with the following.

B. tripartita, L.—Near Dunsford Mill, *Briggs;* Ashton, in ditch near Bramble Farm, two or three plants, 1880 and 1881; Trusham, in one place only, 1880; by pond in orchard at Ruggadon, between Trusham and Chudleigh, 1880, several plants; Teigngrace, rare.

Inula Conyza, DC.—Moreton; Ashton; Hennock; Trusham; Chudleigh (Fl. Dev.); Chudleigh Knighton. Frequent.

Erigeron acris, L.—Ashton, "Quiet Land" Heath; one plant found by me at the end of Sept., 1881, partly eaten by sheep, but still having three heads of open flowers; a few days after two more plants (also in flower) were found at no great distance by Mr. Briggs. No doubt native. New record for S. Devon.

Aster Tripolium, L.—Newton Abbot, and thence to Teignmouth.

Petasites vulgaris, L.—Ashton; Trusham; Chudleigh. Local.

Cichorium Intybus, L. — Doddiscombsleigh; Chudleigh (Fl. Dev.); fields to east and south, frequent; and near the Bridge. Very local.

Leontodon hispidus, L.—Near Caistor Rock; enclosure at Fernworthy; Chagford, near Middleton Hill, *Briggs;* Moreton, in the churchyard, and near the railroad, a few plants only, 1881. Chudleigh; fields about the town and near the Bridge; abundant. Haldon; banks near the race-course and along the road towards Chudleigh; a plant or two at intervals, 1881. Chudleigh Knighton. Decidedly local, but, I think, increasing in the district.

Pieris hieracioides, L.—Ashton and Hennock; rare. About Chudleigh, in fairly good quantity, and especially abundant towards the Haldon race-course. Between Chudleigh Bridge and Chudleigh Knighton.

Helminthia echioides, Gaert.—Ashton, "Quiet Land." Hennock; occasionally by the river. About Chudleigh.

Tragopogon pratensis, L.—Trusham; Haldon; Chudleigh (Fl. Dev.); Newton Abbot. Rather uncommon. Usually, if not always, b. *minor*.

Taraxacum officinale, L., b. *erythrospermum*.—Trusham and Chudleigh; rather common in rocky cuttings, &c. *a. palustre*. Common on heaths and in wet meadows.

Lactuca muralis, Fresen.—On damp wall between Bovey and Lustleigh; also on a wall close to a farmhouse very near Lustleigh village, *Briggs;* in wood to north-east of Lustleigh, on the Moreton Road. No doubt native. Very rare in S.W. England.

Crepis taraxacifolia, Thuil.—Trusham, among sown grass; one plant, 1881. A colonist, of course, as elsewhere in the county.

C. biennis, L.—Ashton, in lane between Rectory and the Exeter Road; several plants, 1881, *Briggs*. Colonist.

Hieracium pallidum, Fries.—Heytor Rocks; abundant. No doubt the plant given for this station as *H. murorum* in Fl. Dev.

H. umbellatum, L.—Holly Street; between Chagford and Moreton; Moreton; by Canonteign Waterfall; Whiteway Woods, near Chudleigh; Kingsteignton. To this species also probably belong some very young plants that I have seen in Nitton Cleave, and between Bovey Tracey and Heytor. The apparent absence from the district of *H. vulgatum*, Fries, and *H. boreale*, Fries, is remarkable.

Jasione montana, L.—Plant with lilac flowers between Chagford and Beetor Bridge, Sept., 1881, *Briggs*.

Specularia hybrida, A. DC.—About Moreton; rather frequent in cultivated land, 1881. Ashton and Trusham; in several fields every year, but usually sparsely. Ilsington, *Briggs*. A colonist.

Wahlenbergia hederacea, Reich.—By the river at Holly Street and Dunsford; about Moreton; by Canonteign Waterfall; Ashton; Bovey Heathfield (Fl. Dev.); between Heytor and Becky Fall. Locally abundant.

Vaccinium Myrtillus, L.—Hillsides near Fingle Bridge and elsewhere above Dunsford Bridge, in great quantity; Ashton; Haldon; Lustleigh; downs about Heytor. Absent from considerable portions of the district.

Vinca minor, L.—Doddiscombsleigh; Ashton; Trusham; Kingsteignton; hedges and borders of woods, often extending for a considerable distance. Also by the river bank for a short distance in Trusham parish. A denizen only, I suspect, everywhere.

Erythræa pulchella, Fries.—Ashton; Trusham; Chudleigh; Bovey Tracey. Locally abundant.

Menyanthes trifoliata, L.—Bovey Vale, between Beetor Bridge and Dartmoor, *Briggs*. Near Moreton, in marshy ground, about one mile and a half south-west of the town, in good quantity, 1881.

Cuscuta Epithymum, Murr.—On a common above Bovey stream between North Bovey and Dartmoor, *Briggs*. Christow and Canonteign Downs; Ashton; Haldon (Mr. Parfitt in Rav. Fl.); Bovey Tracey; Knighton Heath.

C. Trifolii, Bab.—Trusham, among sown clover, 1880 and 1881. Alien.

Hyoscyamus niger, L.—Bovey Tracey; a casual among potatoes; one plant, 1880.

Verbascum virgatum, With.—Near Moreton; Christow; Ashton; Hennock; Trusham; Lustleigh; Wolborough Common. Rather frequent and probably native in at least some stations.

Antirrhinum Orontium, L.—Moreton; Trusham; Chudleigh (Jones's 'Botanical Journal,' Appendix); Chudleigh Knighton. An occasional and often abundant colonist, especially in kitchen gardens.

Linaria Elatine, Mill.—Ashton; Trusham; Chudleigh (Jones's Bot. Tour, App.). Locally abundant.

L. spuria, Mill.—Trusham, with *L. Elatine*, but very rare.

L. repens, Mill.—Fresh specimens of this were brought to me in Oct., 1877, by the late Rev. H. Roberts from "downs west of Christow," the station named in Fl. Dev. I have not seen it growing either there or elsewhere in the county.

L. minor, Desf.—Ashton; Trusham; Chudleigh. A colonist; very local, but usually abundant where found.

Veronica montana, L.—Observed only in Ashton, Trusham, and Chudleigh; but it is very frequent in these parishes, and almost certainly occurs in most parts of the district.

V. scutellata, L.—By the river at Dunsford Bridge. In marshy ground near Moreton; on Knighton Heath; and near Teigngrace. Rare.

V. Anagallis, L.—Newton Abbot; in considerable quantity in a meadow south of the town, and in pools between the town and the river.

Euphrasia officinalis, L.—Apparently *E. montana* at Fernworthy with another form, *Briggs*. Mr. Briggs has also pointed out to me on Canonteign Down what he considers *montana*.

Bartsia Odontites, Huds., b. *serotina*.—Moreton; Ashton; Trusham; Chudleigh. As common as *B. verna*, or commoner. Ranked as a distinct species in Nyman's Consp. Fl. Eur.

B. viscosa, L.—Between Ashton and Trusham, 1879; near Chudleigh, about a mile to the east of the town, 1880. Only a few plants in each station.

Pedicularis palustris, L.—Near Moreton. Remarkably local.

P. sylvatica, L.—Moreton; Christow and Canonteign Downs; Ashton; Haldon. Rather local, but usually in great quantity where it occurs.

Melampyrum pratense, L., c. *montanum* (with orange-coloured flowers).—Holly Street. Above Fingle Bridge.

Orobanche major, L.—About Moreton; Trusham; Wolborough Common. Locally common.

O. Hederæ, Duby.—Chudleigh Rocks.

O. minor, L.—Christow; Ashton; Trusham. Occasionally occurring in great quantity, but apparently only as a casual.

Mentha viridis, L.—Dunsford, by toll-gate. Denizen.

M. hirsuta, L., b. *subglabra*.—Meadows at Teigngrace, 1879, *Briggs*. 1880, in some quantity.

M. sativa, L.—Both forms (*rivalis* and *paludosa*). Common.

M. gentilis, L.—Hennock, between Bottor and the village, by big boulders in heathy spot, 1877; Trusham, in long grass by the river, 1879. Only a plant or two in each place.

Thymus Serpyllum, Fries.—Fairly common, but not so generally distributed as in most districts.

T. Chamædrys, Fries.—Christow and Canonteign Downs; here and there in patches on grassy slopes. Edge of lawn by farmhouse, between Bovey Tracey and Moreton, *Briggs*.

Origanum vulgare, L.—About Chudleigh (Jones's Bot. Tour, App.); Chudleigh Rocks; near Newton Abbot. Native.

Calamintha Acinos, Clairv.—Moreton; Canonteign Down (flowers as often pinkish as blue); and Christow Down, in stony enclosures, in immense quantity; Trusham; Chudleigh (Jones's Bot. Tour, App.). Local; usually, if not always, a colonist.

Melissa officinalis, L.—Ashton; Hennock; Trusham; Chudleigh; hamlet between Bovey Tracey and Ilsington, *Briggs*. Denizen; well-established in some spots, but never far from house or garden.

Salvia Verbenaca, L.—Ashton and Trusham; in several rocky waste places ("Trusham Churchyard," Fl. Dev.). Native.

Scutellaria galericulata, L.—Trusham; Haldon; by the Bovey at Jews' Bridge, &c.; Teigngrace; Newton Abbot. Locally abundant.

S. minor, L.—Moreton; Ashton; Haldon (Fl. Dev.); Bottor and neighbourhood; Bovey Heathfield (Mr. C. E. Parker in Rav. Fl.); Knighton Heath. Rather common.

Melittis Melissophyllum, L.—By the river at Christow; Ashton; and between Trusham and Chudleigh. Nitton Cleave; Canonteign Woods (new 'Botanist's Guide'); woods in Hennock and Chudleigh; by Pen Wood (Fl. Dev.); between Denbury and Ogwell. Rather common.

Ballota nigra, L.—Plant with spotless white flowers, near Bovey Tracey by the road to Lustleigh, Sept., 1881, *Briggs*.

Stachys ambigua, Sm.—Ashton; Trusham, by stream flowing through the village, several plants each year from 1879 to 1881; Bovey Tracey, a few plants together, 1880. I think undoubtedly a hybrid between *S. sylvatica* and *S. palustris*.

Galeopsis Ladanum, L.—Moreton; Doddiscombsleigh; Trusham; Chudleigh (Jones's Bot. Jour., App.). Colonist. Locally common.

Lamium album, L.—About Moreton and North Bovey, in great quantity all round both places; about Trusham, Chudleigh, and

Bovey Tracey; common. Ilsington, *Briggs*. Elsewhere in the district, no doubt, but I believe never very far from houses. See Fl. Plym., p. 270.

L. Galeobdolon, Crantz.—Ashton; Trusham; Chudleigh (Jones's Bot. Tour, App.). Common. Bridford, *Briggs*.

Echium vulgare, L.—Christow and Canonteign Downs, in great quantity; Ashton; Trusham. Local.

Lithospermum officinale, L.—Chudleigh Rocks (Fl. Dev.).

L. arvense, L.—Ashton and Trusham. Rather common in cultivated ground.

Myosotis cæspitosa, Schultz.—About Moreton; from Dunsford Bridge to Newton Abbot, and from Bovey Tracey to Teigngrace, this is the most frequent water "Forget-me-not."

M. palustris, With.—By the Bovey at Jews' Bridge. Apparently absent from Teign Valley proper. The only other station in the county where I have yet seen this species is the valley of the Exe, where it is very abundant between Stoke Canon and Exeter.

M. repens, Don.—Near Chagford and Fernworthy, *Briggs*. Holly Street; Moreton; North Bovey; Dunsford Bridge; Christow; Ashton; Hennock, by the river, and about Bottor; Haldon; Trusham; Ilsington, *Briggs*. Generally distributed, but usually in less quantity than *M. cæspitosa*.

M. arvensis, Hoffm., b. *umbrosa*.—Hedgebanks in lanes at Trusham and Chudleigh; Chudleigh Rocks; Haldon. Frequent. Ranked as a species in Nyman's Consp. Fl. Eur. under the name *M. intermedia*, Link.

M. collina, Reich.—About Moreton; common at Trusham.

M. versicolor, Reich.—Common at Trusham, and on Haldon.

Anchusa arvensis, L.—Ashton. A plant near Lustleigh, by the road to Bovey Tracey, Sept., 1881, *Briggs*.. Teignmouth.

A. sempervirens, L.—Near Moreton (Fl. Dev.); Christow, *Briggs*. Ashton; Trusham, in considerable quantity in several spots at some distance from the village, and in one place at intervals on both sides of a stream; Lustleigh; Ilsington (Fl. Dev.), *Briggs*. Nyman has accepted this as an English species; but, remarkably well established as it is at Trusham and in many other places in Devon and Cornwall, I am afraid it must be ranked as only denizen; while *A. officinalis*, L. (which Nyman considers both Scottish and English) seems no longer to occur out of gardens.

Symphytum officinale, L.—Holly Street; Moreton; Hennock; Trusham; Lustleigh; Bovey Tracey. Quite local.

Pinguicula lusitanica, L.—Bog on Dartmoor, near Fernworthy, *Briggs*. Haldon (Fl. Dev.); Bovey Heathfield; Knighton Heath.

Utricularia neglecta? Lehm. — Claypit near Kingsteignton. Ditches by the railroad near Teigngrace.

Primula officinalis, L.—Trusham, in a field near the Rectory; several plants, 1881; Haldon, near the racecourse; a plant here and there, 1881. Garden escapes certainly in both places.

Lysimachia vulgaris, L.—By the Bovey at Jews' Bridge.

(To be continued.)

SHORT NOTES.

Potamogeton decipiens, Nolte, *var.* affinis, mihi. — Mr. A. Brotherston, of Kelso, has for some years collected specimens of a *Potamogeton* from various stations in the River Tweed; these were at first named "*nitens*, large form." Notes upon it will be found in Journ. Bot. viii. 289, and in the 'Exchange Club Reports' for 1876, p. 35; 1877, p. 10; and 1880, p. 35; but no definite conclusion was arrived at as to its proper name. Mr. Brotherston kindly sent me last autumn a fine series of the plant, and after comparing these with others I propose the above name for it. So far as the English herbaria are concerned, we have nothing that matches it; but the Rev. T. Morong tells me that specimens from Silesia (R. von Uechtritz) in his herbarium are the same thing; and Dr. Tiselius (Stockholm) writes me that the late Prof. E. Fries gathered it in the neighbourhood of Upsala. In the Fl. of Silesia it is named "*P. decipiens*, Nolte! forte *P. perfoliatus* × *lucens*," with a critical note on the plant. As to the question of hybridism, this is certainly, as yet, unproved. It is not typical *decipiens*, Nolte, as the author's types show in Herb. Brit. Mus.; and I cannot agree with Dr. Trimen that it approaches *P. salicifolius*, Wolf. (except in one or two immaterial points), which has leaves of the texture and structure of *prælongus* and *rufescens* rather than of this variety. It is also certainly not *P. nitens*, Web., which in its extreme form (*latifolius*, Tis.! 1881,—a name which cannot stand, as Fieber years ago separated a var. *latifolius* of *nitens*), through the typical form of Weber to the *curvifolius* of Hartman, bears no resemblance to this variety of *decipiens*. It differs from *decipiens*, as represented by Nolte's type specimens, in the leaves being half-clasping, with a peculiar curvature from the centre of the leaf, the peduncules longer, spikes much shorter, sepals different in shape, and the arrangement of the flowers on the axis of the peduncule, in habit, and in the branching of the stems.—Arthur Bennett.

Additions to the British Lichen Flora. — The following Lichens have been identified, and, so far as I am aware, they have not hitherto been recorded for Great Britain:—

Sirosiphon ocellatus (Dillw.), Ktz.—On damp rocks, at the foot of Bowness Knot on the north side, Ennerdale, Cumberland, 1881. Rare.

Lecanora citrina, Hoffm.—Not in fruit, Great Orme's Head, 1881, *J. E. Griffith.*

L. subradiosa, Nyl., Flora, 1872.—On walls, East Allendale, Northumberland, 1881. Rare.

L. galactina, *forma ferrotincta*, Nyl.—On slaty rocks, Lamplugh, Cumberland, 1881. Dr. Nylander suggested the name given this form, on account of the rusty tincture of the thallus.

Lecidea enterochlora, Tayl.; *forma tuberculata*, Johnson. — Thallus rimulose or verrucoso-diffract; apothecia more or less confluent, irregular, convex, immarginate, and tuberculose. In other respects same as type. On sandstone rocks, St. Bees, Cumberland, 1880.

L. percontigua, Nyl.—Distinguished from *L. contigua* by thallus K. yellow, then deep orange-red. On walls, Barrowmouth and Saltom Whitehaven, Cumberland, 1881.

L. plumbina (Anzi), Nyl.—Parasitic on the thallus of *P. plumbea*, Lightf., on a tree, Borrowdale roadside, near Keswick, Cumberland, 1881. Rare.

L. Bouteillei, Desmaz.; *forma rubicola* (Cro.), Nyl., Flora, 1869. —On *Ulex europæus*, roadside between Seascale and Gosforth, Cumberland, 1881. Very rare.—W. JOHNSON.

PROTECTIVE MIMICRY.—On p. 129 of this Journal, Dr. Lees speaks of the superficial resemblance which *Selinum Carvifolia* bears to *Peucedanum officinale* as "bearing upon the question of mimicry," and on p. 131 he speaks of it as a "protective likeness." As this "protective" likeness usually occurs when an edible or otherwise desirable species mimics a noxious or useless species (usually of quite a distinct genus or order), so as to escape detection and eventual extinction, it should be shown in what way the *Selinum* would benefit by the disguise. Dr. Lees speaks of its fruit as "having a peculiar rank pungent taste, scarcely aromatic, but rather between juniper and pennyroyal"; while in 'English Botany' the *Peucedanum* is said to possess "stimulating qualities," the roots being used in Russia as a substitute for ginger. It does not appear, therefore, that either plant possesses noxious or poisonous qualities sufficient to make it advantageous for either to mimic the other, though the balance of advantage seems to be in favour of *Peucedanum* imitating *Selinum*. Is there any established instance of one plant assuming a protective resemblance to another *plant?*—W. H. BEEBY.

DENTARIA BULBIFERA IN KENT AND SUSSEX.—I was surprised on April 19th to find this plant growing abundantly, though very locally, in copses on each side of the small stream that divides Kent from Sussex, and across which the road from Etchingham Station and the village of Hurst Green passes. I also noticed the plant sparingly in a small wood at Highgate, Hawkhurst, on the 20th. I have known both thése localities intimately for twenty years, but never saw the *Dentaria* there before, or have met with anyone who knew of its occurrence in the neighbourhood.—J. COSMO MELVILL.

[There are specimens in Herb. Brit. Mus., collected at Hawkhurst by Miss Otté in 1872.—ED. JOURN. BOT.]

Notices of Books.

Versuch einer Entwicklungsgeschichte der Pflanzelwelt von Dr. Adolf Engler (2 theil). Leipzig, W. Engelmann. 1882.

The second part of this work consists mainly of a series of discussions of the geographic distribution of the plants of the tropics and southern hemisphere. The geologic portions and the speculations on descent are short. In thus apportioning his space Dr. Engler shows a wise discretion. The present distribution of plants can only be treated in a very imperfect way, according as the material has been collected and worked up.

The author begins with Australia, and tabulates and discusses the 8414 species in Bentham's 'Flora Australiensis.' For New Zealand he tabulates the 1093 species in Hooker's 'Handbook' of its flora. For the Sandwich Isles he tabulates the 669 species in H. Mann's 'Enumeration of Hawaii Plants.' For the Andes he tabulates the 1140 species in Weddell's 'Chloris Andina.' For Africa he attempts no tabulation. For South-East Asia he tabulates his own 'Monographs' of *Anacardiaceæ* and *Araceæ*, with a very few other small groups.

Except in these cases Dr. Engler contents himself with partial discussions of the flora by citing representative genera present or wanting in each area, genera appearing in more or less widely separated areas, &c. It would be absurd to say that no general discussion ought to be attempted till every country has its flora worked out; the completion of such a work as Bentham's 'Flora Australiensis' has naturally incited Prof. Engler to his present publication, which contains a large drawing together of facts and numerous suggestions.

From the nature of the work there is hardly a page which does not provoke criticism. The tabulation of Bentham's 'Flora Australiensis,' by orders and tribes only, occupies nineteen pages. The result shows (*inter alia*) that there are 4184 species indigenous in East Australia as against 1852 in North Australia. This extraordinary result arises from a combination of causes:—1st. The divisions adopted are political; the north end of Queensland is reckoned in East Australia. 2nd. The collections in North Australia are confined to one level and to one class of country, *viz.*, the coast of the Gulf of Carpentaria. 3rd. The collections from North Australia are very much smaller than those from East Australia. 4th. In the case of many common plants, Bentham's 'Flora' does not quote them as having been sent from North Australia specially; they thus do not appear in Engler's tabulation. 5th. The localities cited for any particular species are not supposed by Bentham to give the complete area of the species; they are the citations of a few sheets of the good examples which chance to have come to his hands. 6th. Engler has not in all cases correctly tabulated Bentham's geography; as, for instance, when he states (in his text as well as in the tabulation) that *Commelinaceæ* are absent as an order in West Australia, though the errors under this last head are unimportant as compared with those under the other five.

In fine, although a large number of additional facts are now to hand, it may be doubted whether, in the discussion of the Australian, New Zealand, and Antarctic flora the general results of Dr. Engler are at all an advance upon Sir J. D. Hooker's Essay of 1853.

Madagascar is very imperfectly known botanically; nearly all the collections have hitherto been made round Antananarivo and on the routes thereto; the plants received in England during the present year prove that it is at present vain to found an argument on the absence of any genus from Madagascar.

The discussion of the African flora is one of the best of Prof. Engler's interesting book; he has wrought out the analogy in structure, climate, and vegetation between Africa south of the Sahara and hither-India south of the Gangetic Plain, the wet West Malabar being paralleled in the wet West Cameroons.

The tabulation of genera for South-East Asia occupy six large quarto pages, but they are confined to a half-dozen isolated orders. Prof. Engler says, in the text, that he has tabulated Cogniaux's *Cucurbitaceæ;* but in the table only four genera appear. The selection of the orders and genera for tabulation is so arbitrary that the only general inference Prof. Engler is enabled to draw from them is that the genera overlap each other a good deal, and that it is not easy to lay down limits for phytographic subareas, an inference which might perhaps have been arrived at without tabulation. Attention is drawn to the fact that the oaks and pines, though continued from the Himalaya to low levels in the Malay Archipelago, do not appear in Ceylon and South India, even in the mountains, on which (and other parallel facts) the condensed Indian geology of Blanford and Medlicott may supply Professor Engler with food for further reflection.

Any article treating on the geographic distribution of the plants of the world must be built in chief on secondary evidence, and the results will be invalidated in numberless cases by errors for which the compiler is not responsible. The genus *Dicellostyles* is cited by Engler as a solitary instance of a genus of two species, whereof one is endemic in Ceylon, the other endemic in the Himalaya; but it happens that the Himalayan *Kydia jujubiflora*, Griff., is a true *Kydia*, and has been erroneously referred to *Dicellostyles* by Bentham and Masters. Dr. Engler cannot be criticised for accepting such authority; but many anomalies in distribution which stand in our books disappear on studying the plants themselves.

In estimating the richness of tropical floras, Prof. Engler has perhaps made insufficient allowance for elevation, *i. e.*, whether mountains, affording great variety in level, are included under the area treated of. Thus he speaks of the comparative poorness of the flora of China, which is true of the great plain of cultivation: this, like all tropical plains of one level and of one character of soil, affords a very uniform flora, consequently not rich in species and genera. But it cannot be doubted that, when we obtain collections from the western and south-western mountains of China, we shall find the flora as rich as in the adjoining districts of Upper Burma.

For a work such as Prof. Engler has attempted it would appear that the qualification of extensive travel is essential. A traveller may correct the larger misconceptions educed from tabulation by his own experience. The work of tabulation, as performed by Prof. Engler, takes no account whatever of the number of individuals in a species, genus, or order. To get any idea of a flora we require noted (at various seasons of the year) the predominant plants, especially the trees, shrubs, and gregarious herbs. Tabulations, supported by such lists, and made by the same traveller who draws them up, are of the greatest value: these can of course only be drawn up for moderate areas: when many such have forthcome, a work similar to that of Dr. Engler may proceed from much surer bases to more valuable conclusions. But it would be unfair to say that nothing is to be done botanically till it can be done completely; or to deny the usefulness of Prof. Engler's work because of its extremely fragmentary character.

Compendio della Flora Italiana. Per GIOVANNI ARCANGELI. Turin: Loescher, 1882.

THE country included in this handy Flora of Italy takes in from the Mediterranean, the Maritime, Cozie, Graje, Pennine, Lepontine, Retiche and Carniche Alps to Fiume on the Adriatic, thus including Istria: Dalmatia with its adjacent islands, which the author considers to have an intimate relation to the oriental Flora, is excluded. From Fiume the Flora includes the islands Pelagosa (Adriatic), Sicily, Malta, Pantellaria, Sardinia, Corsica, hence to Varo.

Prof. Arcangeli divides Italy into "Italia superiore," "I. media," "I. inferiore,"—Sicily, Sardinia, and Corsica. The classification followed is a combination of that of Jussieu and DeCandolle. For the orders he has taken as his model Hooker's 'Student's Flora,' which he speaks of as "prezioso manuale." He gives a definition of each order, short notes on the distribution, number of genera and species included under it, affinities, properties, and derivation of the name. A clavis of the genera and description of the species (in Italian) follow, the important parts being in italics. The citation of authorities for the names of species is given at somewhat greater length than is usual in books of this kind. The species sum up to the large number of 5050 (of which about 1294 are British or Irish). A comparison with Nyman's 'Conspectus,' of two genera, will give a good idea of the limitation of species followed; thus, *Saxifraga*, in the 'Flora,' has 46 species and 19 varieties; Nyman, for Italy, has 43 species and 6 sub-species. *Gentiana*, in the 'Flora,' has 20 species and 15 varieties; Nyman, 19 species and 5 sub-species. This shows the author to have followed a middle course in his estimate of species.

In one or two cases British plants are numbered as species which in our Manuals are not considered as such. The author has not apparently considered it necessary to refer to all Italian published species, though several are noticed as "sp. dubia." Doubtless many (as Bivoni's) are merely local forms.

At the end of the 'Flora' is given a complete list of the mountains, arranged in groups, with the heights of the principal peaks. From this it appears the highest point in "Italia superiore" is 4815 metres, "I. media," 2919 met., "I. inferiore," 2248 met., Corsica 2673 met., Sardinia 1918 met., and Sicily 3312 met. The book is furnished with a capital index of the scientific names, but the popular names are not indexed. For the determination of Italian species the book will be valuable, not only to workers at home, but also to travellers, bringing as it does into a compact form descriptions before scattered through many volumes.

A. B.

ARTICLES IN JOURNALS.—MAY.

Botanische Zeitung (April).—F. Elving, 'On the working of the galvanic current in growing plants.'—E. Kern, 'On the Milk-ferment of the Caucasus.'—H. Müller, 'On the Biological Signification of the Peculiar Flowering of *Eremurus spectabilis*.'—(May). J. Reinke, 'On Theories of Assimilation.'—T. W. Engelmann, 'On the Biology of the *Schizomycetes*.'

Botanisches Centralblatt.—'Discovery at Toulouse of a MS. Work by Tournefort.'—G. Limpricht, 'On the Systematic Arrangement of *Sphagnaceæ*.'

Botaniska Notiser.—K. P. Hägerström, 'On the Flora of Lapponia Tornensis.'

Flora (March).—F. Arnold, 'Lichenological Fragments' (*Microglæna umbratilis*, n. sp.)—(April). C. Kraus, 'On the course of the Sap in Plants' (contd.)—J. Röll, 'Sketch of the Moss-Flora of Germany and Switzerland.'—(May). G. Limpricht, 'New and critical Mosses' (*Hypnum styriacum*, n. sp.)—C. Warnstorf, 'New German forms of *Sphagnum*.'

Hedwigia (April).—P. Richter, 'Is *Sphærozyga Jacobi* a synonym of *Mastigocladus laminosus?*'—C. Warenstorf, 'Bryological Notices for Brandenburg and Westphalia.'

Magyar Novenytani Lapok (March).—L. Simkovics, 'On the Vegetation of Pancsova.'—(April and May). J. Schaarschmidt, 'On the knowledge of Hungarian Fossil Bacillarias.'—Id., 'Additamenta ad Phycologiam Dacicam' (contd.)—A. Kanitz, '*Viscum* parasitic on *Loranthus*.'

Midland Naturalist.—W. B. Grove, 'On Myxomycetes' (contd.)—J. E. Bagnall, 'On the Flora of Warwickshire' (contd.)

Œsterr. Bot. Zeitschrift.—F. Pax, 'On the Flora of Silesia.'—F. Hoffmann, 'On the Flora of Bosnia' (contd.), *Symphyandra Hoffmanii*, Pant., n. sp.)—D. Hirc, 'Three Days in Fuzine.'—P. G. Strobl, 'On the Flora of Etna' (contd.).

LINNEAN SOCIETY OF LONDON.

February 16, 1882.—F. Crisp, Esq., Vice-President, in the chair.—A paper by A. Stephen Wilson, entitled 'The Potato-Disease and the theory of fungoid parasitism,' was read.

March 2.—Sir John Lubbock, President, in the chair.—Col. R. H. Beddome, Revv. R. P. Murray, W. H. Dallinger, R. Hooper, Messrs. T. B. Chambers, C. D. Ekman, W. Fream, C. D. Labalestier, R. Vipan, were elected Fellows of the Society.—A paper by Mr. Charles Knight, entitled 'Contributions to the Lichenography of New South Wales,' was read; it includes the description of about fifty new species.

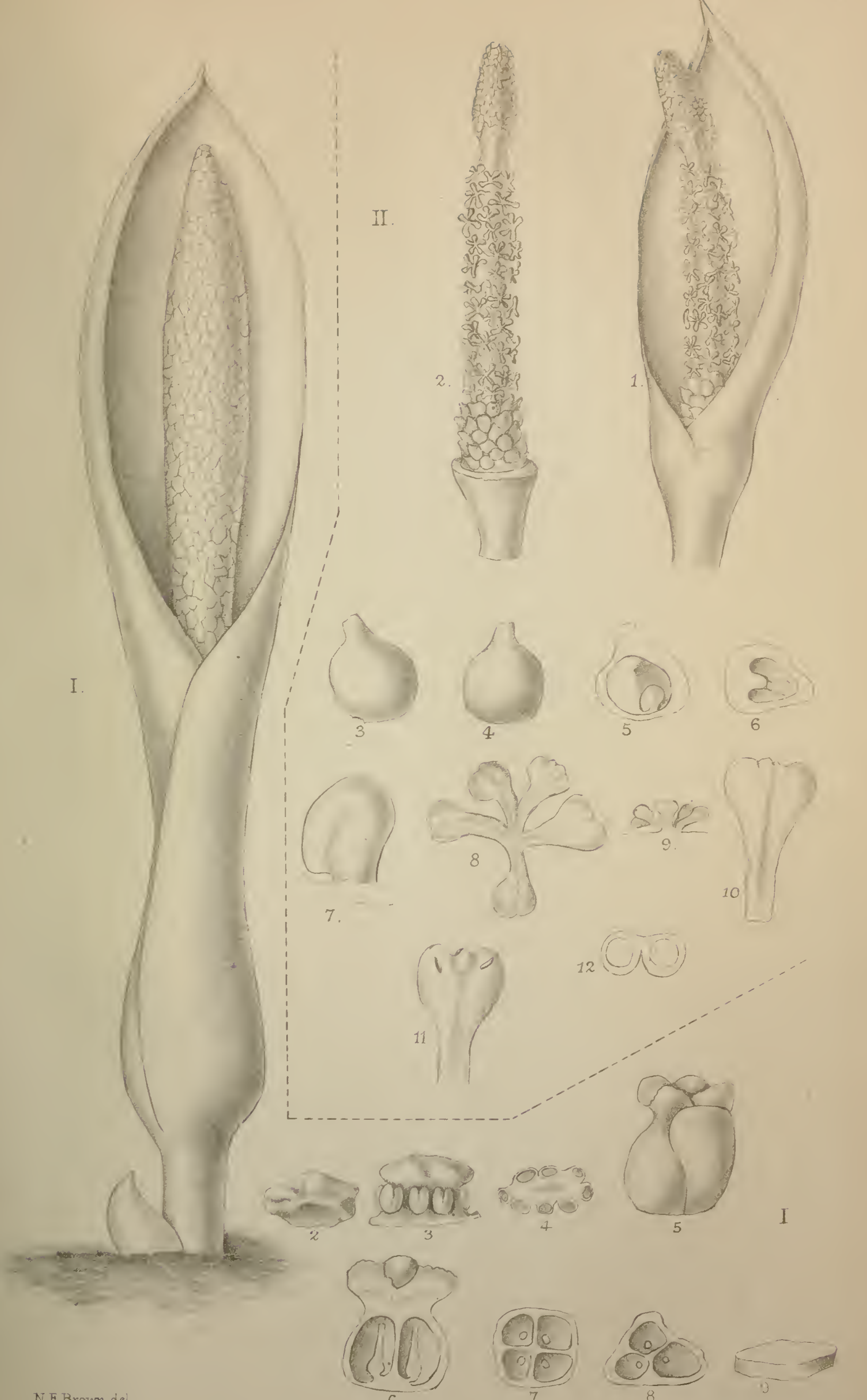
March 16.—Sir John Lubbock, President, in the chair.—Messrs. H. M. Brewer, V. J. Chamberlain, and A. P. Withiel Thomas, were elected Fellows of the Society.—Mr. Worthington G. Smith called attention to certain very destructive Australian fungi new to England, viz., *Capnodium australe*, fatal to Conifers, especially Thuyas, and to *Isaria fuciformis*, a great pest to grass in Kent and Sussex. The latter plant is popularly supposed to induce a disease similar to diphtheria, and said to be fatal to cattle. *Isaria* frequently grows on animal substances, dead and living, as on larvæ and pupæ of ichneumons, spiders, moths, wasps, &c. Mr. Smith exhibited a bee caught alive in this country, and having a profuse growth of the *Isaria*-condition of the *Cordiceps sphecocephala*, a West Indian form—the latter genus is closely allied to *Claviceps* on ergot.—Two papers by Mr. Charles Darwin were thereafter read, viz.: (1) 'On the Action of Carbonate of Ammonia on the Roots of Certain Plants.' Many years ago the author observed that, when the roots of *Euphorbia Peplus* were placed in a solution of carbonate of ammonia, a cloud of fine granules was deposited in less than a minute, and was seen travelling from cell to cell. These enquiries were resumed by digging up plants of this species, and carefully washing away the earth. The rootlets were then examined, and sections of the thicker roots made. All the cells were found to be colourless, and destitute of any solid matter, the laticiferous ducts being excluded from observation. These roots were left for different periods in solutions of different strengths, viz., for 1 to 7 parts of the carbonate to 1000 of water; they then showed a wonderful change. A solution of only 1 part to 10,000 of water sufficed in twenty-four hours to produce the same result. In well-developed cases the longitudinal rows of cells close to the top of the root, with the exception of those forming the extreme apex, were filled with brown granular matter, which rendered them opaque. Long-continued immersion in water produced no such effect. Some rows of cells are destitute of granular matter, and alternate with those that are an appearance sometimes continued to the stem of the plant. These exterior cells, which contain granules, do not give rise to root-hairs, these arising exclusively from the colourless and apparently empty cells. The deposition takes place rapidly, within a few seconds. Phosphate of ammonia, 4 parts to 1000 of water, caused the same effect, but no reagent was as rapid as the carbonate. The precipitated granules were not observed to be re-dissolved. They were not dissolved by long immersion in alcohol or acetic acid, or washing with sulphuric ether, nor a 10 per cent. solution of common salt, the last being able to dissolve alemone grains. The granules were, however, broken up when heated for a short time in caustic potash ley; hence the granules are inferred to be of the nature of protein. Analogous results were obtained in two other Euphorbiaceous genera; but the results were not uniform, nor were they in twelve other genera experimented upon, the *Droseraceæ* showing some remarkable results. The main roots of *Drosophyllum lusitanicum* after treatment showed one; or more commonly several masses of brown translucent matter; the loose cells of the root-cap also had them, a fact worth noting. In the roots of *Cyclamen persicum* a great change occurred, green granules making their appearance after treatment with a solution of 7 to 1000 to such an extent as to give a green tint to roots previously brown. Sulphuric ether does not dissolve them, nor discharge their green colour; whilst acetic acid changes them to dull orange. Most of the root-hairs arose from colourless cells, but some sprung from granule containing cells. The conclusion drawn was that these granules are probably due to excreted matter. No previous writer seems to have suspected that root-hairs do not arise indifferently from any of the exterior cells. (2) 'The Influence of Carbonate of Ammonia on Chlorophyll-Bodies.' The phenomena of aggregation is best seen in the tentacles of *Drosera* when any nitrogenous particle has been placed on it. The purple fluid in the cells becomes turbid, then granules are seen, which soon coalesce and grow larger; later, these large masses send out processes in a curious manner, until one or two spheres are formed which remain motionless. Protoplasmic waves may then be seen; granules withdrawn from them are absorbed by the masses in the centre. After a few days the solid aggregated masses are re-dissolved, the process commencing at the base of the tentacle working upward,—that is, in direct opposition to the in-aggregation. The whole process is a vital one. Chlorophyll consists of modified protoplasm; the grains not only change their position and shape, but divide. In *Dionæa muscipula* the cells of each leaf filled with chlorophyll change in colour permanently when an insect nas been caught. A thin leaf was immersed for twenty-four hours in a solution of carbonate of ammonia, 7 to 1000, and sections were made and examined. The cells near the margin of the leaf did not exhibit a single chlorophyll-grain, but had instead masses of transparent yellowish green matter of various shapes. Hence it seems that carbonate of ammonia first acts on the cell-sap, producing a granular deposit of a brownish colour, and that this tends to aggregate into balls; afterwards the grains of chlorophyll are acted on, and become completely confluent, or breaking up into fine granules. Experiments were also made by administering an infusion of raw meat to plants, in *Nepenthes*, *Drosera*, *Pinguicula*, &c., and other genera. From these experiments, the author considers it established that chlorophyll-grains are re-formed after being broken up; he further considers that these contain living protoplasm, to which may be attributed their various movements.

April 6.—Sir John Lubbock, President, in the chair.—Messrs. John Blackie, C. C. Lacaita, J. W. Phillips, and John B. Wilson were elected Fellows of the Society.—Mr. Patrick Geddes exhibited and described a series of living specimens under the microscope illustrative of the presence of Algæ in Radiolarians and certain forms of Cœlenterata.—The following papers were read: 'On the Connection between Geotropism and Growth,' by Mr. Francis Darwin.—'Note on Negative Heliotropism in *Fumaria corymbosa*,' by Mr. B. Daydon Jackson. M. Battandier has noticed that in this plant, which grows in the crevices of overhanging rocks, the pedicels after flowering lengthen out, and deposit the fruits in such crevices as may be within reach.—'Some Observations on the Breaking of the Shropshire Meres,' by Mr. William Phillips. The phenomena locally known as "breaking" usually occurs in autumn, and is caused by the rapid development of the following Algæ, viz.: *Echinella articulata*, *Anabania circinalis*, *Cylindrospermum Ralfsii*, *Sphærozyga Carmichaelii*, and *Cœlosphærium Kutzingianum*. The author specially draws attention to the fact that the phenomenon has this year occurred in the month of February.

April 20.—Sir John Lubbock, President, in the chair.—Sir Thomas D. Acland, Bart., M.P., was elected a Fellow of the Society.—The President then addressed the Meeting, and made some remarks upon the loss which science had sustained in the death of Mr. Charles Darwin; and, as a tribute of respect to his memory, he moved that after the formal business was concluded the Meeting should adjourn.

May 4.—Sir John Lubbock, President, in the chair.—Dr. Cuthbert C. Gibbes was elected a Fellow of the Society.—The following papers were read: 'On a Collection of Algæ collected in the Himalayas,' described by Prof. Dickie, F.L.S.—'On new varieties of the Sugar-Cane produced by planting in apposition,' by the Baron de Villa Franca, and Dr. Glass, Superintendent of the Botanic Garden, Rio de Janeiro, communicated by the late Charles Darwin. In correspondence which had passed between the above-mentioned gentlemen, Mr. Darwin had expressed doubts as to whether two varieties could affect the character of the buds produced by either, it appearing more probable to him that the new variety was due to bud-variation. The Baron de Villa Franca thereupon forwarded a document signed by eight distinguished Brazilians, testifying to the fact that valuable varieties have been raised by the process in question. Dr. Glass furthermore describes in detail his early but fruitless attempts to graft two varieties of the sugar-cane, though he succeeded with another monocotyledon, viz., *Dracæna*.—'Notes on some Cape Orchids, with a list of published species of Cape Orchids,' by Harry Bolus, F.L.S.—'Note on the Dimorphic Florets of *Catananche lutea*,' by B. Daydon Jackson.

Tab. 231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N E Brown del
R. Morgan lith.

West Newman & C° imp

I. Gearum brasiliense. II. Pseudodracontium anomalum.

Original Articles.

FOUR NEW GENERA OF *AROIDEÆ*.

By N. E. Brown, A.L.S.

(Tabs. 230 & 231.)

Pseudodracontium, n. g.

Spathe boat-shaped, very shortly convolute at the base. Spadix monœcious, appendiculate, free, sessile; male and female portions contiguous, appendix stipitate, more or less deeply fissured. Perianth none. Ovaries free, crowded, subglobose (or ovoid ?), one-celled with one basal, subsessile, erect, anatropous ovule; style very short, stigma simple. Male flowers scattered, stamens 3–6, free (or in some flowers more or less united in a column); anthers continuous with the filaments, subglobose or obcordate, dehiscing by two small, linear, oblique, extrorse, subapical slits. Rootstock tuberous. Leaf solitary, contemporary with the flowers, petiole very shortly vaginate at base, three-branched at apex, all the branches pinnately divided, or the middle branch reduced to one entire or slightly lobed leaflet. Primary lateral veins of the leaflets numerous, parallel, nearly straight, uniting in a continuous intramarginal vein, outside of which close to the margin is a second intramarginal vein. Peduncle solitary, erect.

Species 2 (or 3 ?), natives of Cochin China. This distinct and remarkable genus belongs to the tribe *Amorphophalleæ*, and should be placed next to the genus *Thomsonia*. The very imperfectly known genus *Gorgonidium* is probably a near ally.

The characters of the two species of this genus here described are taken from living specimens, and in both, the middle branch of the lamina of the leaf bore but one leaflet, entire in *P. Lacourii*, and with a small basal lobe on one side in *P. anomalum*; but in a drawing of a plant belonging to this genus kindly sent to me by Dr. L. Pierre, Director of the Botanic Garden, Saigon, the middle branch of the lamina is pinnatipartite like the lateral branches, and the ovary is represented of a distinct ovoid form, without a distinct style as there is in the two species here described; it will therefore probably prove to be a third species of the genus.

P. anomalum, n. sp. [Tab. 231, fig. II.] — Tuber depressed napiform. Petiole 1½ ft. long, ½-inch thick at base, terete, finely sulcate striate, glabrous, pale olive-green, marked with numerous irregular blotches and dots of blackish, and parallel striæ of dark olive. Middle segment of the lamina (in the only specimen seen) with one oblong acute leaflet 7 inches long, 2¼ inches broad, with a small oblong acute lobe on one side at the base; the lateral segments 8 inches long, unequally pinnatipartite, each with 4–5 leaflets varying from 1½–6 inches long, and from 1–2¼ in. broad, all oblong acute, bright green, unspotted, the lateral ones unequal-sided and decurrent at the base. Peduncle as long as the petiole and similarly coloured, 3–4 lines thick, terete, finely sulcate-striate. Spathe 2¾ inches long, pale greenish yellow, boat-shaped, shortly mucronate-acuminate. Spadix 2¼ inches long, the fertile portion terete, the male part nearly three times as long as the female part. Ovaries pale green, globose; placenta septa-like, projecting one-third across the cell; style very short, terete. Stamens pinkish (perhaps whitish before dehiscence), spreading, anthers obcordate. Appendix stipitate, conical, obtuse, white, rugulose, with very numerous crack-like fissures.

Cochin China, (Island of Phu Quoc ?). Introduced by Mr. Godefroy Lebeuf; flowered at Kew, October, 1878.

P. LACOURII, n. sp.—Petiole 12–15 inches long, terete, finely sulcate-striate, light green or light olive-green, blotched with darker green and pink. Middle segment of lamina with one entire oblong-lanceolate acuminate leaflet, 4–5½ inches long, 1¾–2 inches broad, narrowed at base into its 1-inch long petiole; the lateral segments pinnatipartite, each with about three oblong-lanceolate acuminate leaflets 3½–5 inches long, 1¼–2¼ inches broad, the lateral ones oblique at the base, but scarcely decurrent, all bright green marked with scattered roundish white spots, the margins somewhat undulate and slightly revolute. Peduncle like the petiole, but longer. Spathe light green, boat-shaped, with the apical part slightly recurved (always ?), shortly and somewhat abruptly acuminate. Fertile part of spadix terete, the male portion twice as long as the female portion. Ovaries very pale greenish, depressed, globose, placenta scarcely projecting. Style very short, terete. Stamens whitish, turning darker when the anthers dehisce, less spreading than in *P. anomalum*, the filaments of the lower flowers more or less united in a column, anthers subglobose. Appendix white, stipitate, conical, obtuse, divided by sinuous crack-like fissures into smooth, somewhat brain-like convolutions. Odour none.—*Amorphophallus Lacourii*, Linden and André, in L'Illust. Horticole, 1878, vol. xxv. p. 90, t. 316!

Cochin China (Island of Phu Quoc.) Described from living plants presented to the Royal Gardens, Kew, by Mr. Linden, one of which flowered in May of this year.

RHEKTOPHYLLUM, n. g.

Spathe tube closely convolute, cylindric; lamina boat-shaped, subacute. Spadix monœcious, free, sessile, exappendiculate, the male and female portions closely contiguous, flowers without a perianth, densely crowded,* no neuter organs. Ovary subglobose, or more or less angular by compression, one-celled, with one subsessile anatropous ovule, seated at about the middle of a projecting parietal placenta. Stigma discoid, subsessile. Male flowers 3–5-androus; anthers sessile, obpyramidate prismatic, truncate; anther-cells linear, as long as the thick connective, dehiscing by pores at their vertex. A stout subepiphytical climber. Leaves long petioled, cordate-oblong in outline, perforate and subpinnatipartite, or pinnatipartite; primary lateral veins stout, distant, the three or four basal ones united and denuded at the sinus, more or less horizontal or retrorse, the rest spreading or ascending, all nearly straight for three-quarters of their length, then more or less abruptly curved up and excurrent in a very slender intramarginal vein just within the margin; secondary veins distant, ascending, slightly and gradually curved. Inflorescence terminal.

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* The male flowers are represented as too laxly arranged in the plate, the lithographer not having copied my drawing quite faithfully.

Species one, native of West Tropical Africa.

This genus is allied to *Philodendron*, but is well distinguished from that and all other genera of the group to which it belongs, by the structure of the ovary and the form of the leaf.

R. MIRABILE, n. sp. [Tab. 230.] — Stem an inch thick, climbing to a height of 30 feet. Petioles two feet or more long, stout, sulcate-grooved at their base. Lamina 18 inches long, 12–13 inches broad, subcoriaceous, cordate-oblong, somewhat abruptly subacute, divided nearly or quite to the midrib on each side in one or two places, so that the leaf becomes subpinnatipartite, and having one or two large slit-like perforations on each side; primary lateral veins 3 or 4 on each side of the midrib, besides the basal ones. Peduncles about two together, 1½–2 inches long, stout. Spathe 4 inches long, fleshy, green, fruit-red.

Fernando Po, G. Mann, No. 101, December, 1859! Barter!

The Kew Herbarium also contains a leaf collected by Mr. Monteiro, in Old Calabar, which differs slightly in the cutting and venation of the leaf from the Fernando Po specimens, and when the inflorescence is known may prove to be a distinct species.

GAMOGYNE, n. g.

Spathe ellipsoid acute, closely convolute except a small opening a little below the apex, the upper portion deciduous after fertilisation in the form of a calyptra. Spadix monœcious, free, sessile, exapppendiculate, male and female portions closely contiguous with an intermediate staminodiferous portion, flowers without a perianth, densely crowded. Ovaries entirely connate, one-celled, ovules numerous, suborthotropous, on long funicles, ascending, biseriate on parietal placentas. Stigma sessile, discoid. Staminodia free, angular by mutual compression, truncate. Male flowers 2–androus? anthers subsessile, free, oblong, compressed, truncate, the cells linear-oblong, opposite or sub-opposite, reaching nearly to the base of the connective dehiscing by pores at their vertex; a few at the apex of the spadix abortive. Perennial tufted herbs, with petiolate lanceolate or oblong-lanceolate leaves, the petiole very shortly sheathing at the base; primary lateral veins ascending, excurrent in an intramarginal vein, secondary veins numerous, arising from the midrib and parallel with the primary ones. Peduncle solitary, elongate; spathe nodding or obliquely ascending.

Species two, natives of Borneo.

Allied to *Piptospatha*, of which it has the habit and general appearance, but is at once distinguished by the united ovaries and different anthers.

G. Burbidgei, n. sp. — Petiole 4–5 inches long, terete, channelled down the face, dilated into a very short sheath at base; lamina cuneate-lanceolate acute, 9 inches long, $1\frac{3}{4}$–2 inches broad; midrib very prominent and rounded beneath, primary lateral veins 7–9 on each side of it. Peduncles longer than the petioles. Spathe $1\frac{1}{2}$–2 inches long, light rose-coloured. Spadix terete, the male and stamodiferous portion thicker than the female part; ovaries pale greenish, anthers cream-coloured ?

North West Borneo; margins of rocky mountain rills, Bukit Sagan, 500 feet, Burbidge !

Mr. Burbidge informs me that he also discovered a second species of this genus about 100 miles farther north, fringing the Dahombang and Kina Taki streams, near Kina Balu mountain; he unfortunately lost both the living plants and specimens of it. But from the description Mr. Burbidge gave me of it, and from a drawing of it with which he has kindly furnished me, it appears to differ from the above described species in its larger size, broader leaf, and much thicker spadix.

Gearum, n. g.

Spathe tube convolute, very oblique at the base, limb boat-shaped, acute, mucronate. Spadix monœcious, free, obliquely sessile, exappendiculate, male and female portions closely contiguous with an intermediate staminodiferous portion. Flowers densely crowded. Ovaries intermixed with flattish obovate neuter organs,* subglobose or globose-trigonous, 3–4-celled, each cell with one subbasilar, subsessile, erect, orthotropous ovule. Stigma sessile or subsessile, 3–4 lobed. Male flowers nude, 4–(5 ?)-androus, stamens united in a very short sub-hexagonal truncate column; anther-cells short, elliptic-oblong, placed beneath the margin, dehiscing by short apical slits. Rootstock tuberous. Leaf appearing after the flowers, solitary ? pedate. Inflorescence solitary, peduncle short.

Species one, native of Brazil.

G. brasiliense, n. sp. [Tab. 231, fig. I.] — Flowers appearing before the leaf. Peduncle 1–$2\frac{1}{2}$ inches long. Spathe white, 5–6 inches long, tube and limb subequal. Spadix shorter than the spathe, the female part occupying one-sixth of its length, terete, male part fusiform.

Brazil, on the plains in low-lying places that are often inundated, between Sapé and Santa Brizida, Province of Goyaz. Burchell, No. 8111 !

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* The material being partly destroyed by insects, I am unable to say whether these neuter organs (staminodia ? perianth-segments ?) were merely intermixed with the ovaries, or whether each ovary was surrounded by a definite number of them as in *Dieffenbachia*; only two or three of them were found, although several ovaries were examined, so probably they do not surround each ovary.

The material upon which I have founded this genus is so much eaten by insects that I should have hesitated to publish it had it not been that the habit, the structure of the ovary, and the orthotropous ovules plainly show that it can belong to no genus at present described, its nearest ally being *Staurostigma*.

There is no leaf with Burchell's specimen in the Kew Herbarium, but in his MSS. catalogue No. 8111 is thus described, "Spadix terrestris fere acaulis. Spatha alba, ante folia. Folia pedata. In locis depressis campestribus fluviis sæpe inundatis." Among the Aroids of Burchell's herbarium are four leaves (No. 8598) collected near Porto Real, which are pedate; and as this locality is also in the province of Goyaz, and the situation in which they were found similar ("In humidis depressis. Petioli et folia immaculata," Burchell's MSS.), I am inclined to think that, if they do not belong to the same species as the flowering specimen here described, they probably belong to the genus; I therefore give a short description of them:—Petiole about 6 inches long. Lamina pedate, middle leaflet sessile, lateral branches with 4–5 sessile narrowly decurrent leaflets along their upper edge, and about the same number of short spur-like or falcate acute expansions of the lamina along their lower edge; leaflets narrow oblanceolate acuminate, the middle one 4–5 inches long, $\frac{1}{2}$–$\frac{3}{4}$ inch broad, the others gradually decreasing in size. These leaves are unlike those of any other South American Aroid known to me, but of those hitherto described they most nearly resemble the leaf of *Chlorospatha Kolbii*, Engl. (Gartenfl. t. 933), but that plant produces flowers and leaf together, and there are no laminal expansions on the lower edge of the lateral branches of the leaf.

Explanation of the Plates.

Tab. 230.—Rhektophyllum mirabile.—Fig 1. Leaf, one-fifth natural size. 2. Inflorescence, natural size. 3. Spadix, natural size. 4 & 5. Dorsal and side views of one of the lowest ovaries. 6. Transverse section of the same. 7. Side view of another ovary higher up the spadix. 8. Transverse section of the same. 9. Longitudinal section of an ovary, radial to the axis. 10. Ditto, ditto, tangential to the axis. 11 & 12. Two groups of anthers, seen from above. 13. Transverse section through the top of an anther. 14. Front view of an anther (Figs. 4 to 10 magnified six diameters; 11 & 12 magnified two diameters; 13 & 14 magnified four diameters.)

Tab. 231.—I. Gearum brasiliense, inflorescence natural size. Fig. 2. Male flower, seen from above. 3. Ditto, side view. 4. Ditto, transverse section. 5. Ovary and neuter organ. 6. Longitudinal section of an ovary. 7 & 8. Transverse sections of two ovaries. 9. Staminode (Figs. 2 to 9 variously magnified.)—II. Pseudodracontium anomalum. Fig. 1. Spathe and spadix. 2. Spadix with the spathe removed. 3. Side view of an ovary. 4. Dorsal view of an ovary. 5. Longitudinal section of ovary radial to the axis. 6. Transverse section of ovary. 7. Ovule. 8. Group of stamens, seen from above. 9. Ditto, side view. 10. Stamen, inner face. 11. Stamen, outer face. 12. Transverse section of anther. (Figs. 1 & 2 natural size; 3 to 12 variously magnified.)

FLORA OF THE CROAGHGORM RANGE, CO. DONEGAL.

By H. C. Hart, B.A.

The Croaghgorm or Bluestack range of mountains lie north and west of Barnesmore Gap and Lough Eask, reaching nearly to Glenties. The group is about seven miles across; in it are several small tarns, as well as one good-sized lake, Lough Belshade (1050 feet). The highest points are—Bluestack, 2219 ft.; Lavagh More, 2211 ft.; Croaghgorm, 2118 ft.; Silver Hill, 1979 ft.; and Gaugin Mount, 1865 ft.

The formation of this range is of Silurian age: schists and sandstone for the most part, but in the immediate neighbourhood of Bluestack and between it and Lough Eask the rock is granite. At Lough Belshade the scenery is precipitous and beautiful, and in other places picturesque glens and shady ravines render the exploration very agreeable. I spent three days amongst these mountains, in which time I traversed them in all directions. Mention of the rarer plants met with will be found in the 'Journal of Botany' for 1881, pp. 233–240; in the present paper I give the results for which I undertook detailed examination of the district, namely, the vertical ranges of the different species upon the mountains. Cultivation ascends to from six to seven hundred feet above sea-level, and since the lowland flora is of no special interest I include plants observed above that level only.

In the higher ground thus examined I met with 158 species. Of these the following eleven belong to Watson's Highland type:—

Thalictrum alpinum, *L.*
Sedum Rhodiola, *DC.*
Saxifraga stellaris, *L.*
Hieracium anglicum, *Fries.*
Vaccinium Vitis-Idæa, *L.*
Salix herbacea, *L.*
Juniperus communis, *L.*, *var.* nana.
Asplenium viride, *Huds.*
Lycopodium alpinum, *L.*
L. selaginoides, *L.*
Isoetes lacustris, *L.*

Watson's northern type plants are few, considering the latitude:—

Crepis paludosa, *Moench.*
Drosera anglica, *Huds.*
Antennaria dioica, *R. Br.*
Lobelia Dortmanna, *L.*
Pinguicula vulgaris, *L.*
Empetrum nigrum, *L.*
Polypodium Phegopteris, *L.*

Thalictrum alpinum, which grows here freely, was the rarest Irish plant observed. *Lycopodium alpinum* is common, especially on the granite, but it is not confined to it. A careful search for holly fern, which has been recorded from here, proved unsuccessful (see 'Journ. Bot.' 1881, p. 240).

General List of Plants on the Croaghgorm Range, arranged in descending order.

2219 ft.
Campanula rotundifolia, *L.*
Salix herbacea, *L.* (to 1000).
Agrostis vulgaris, *With.*
Festuca duriuscula, *L.*
Lycopodium Selago, *L.* (to 1200).

2211 ft.
Taraxacum officinale, *Wigg.*
Lycopodium alpinum, *L.* (to 1700).

2200 ft.
Eriophorum polystachyum, *L.*
E. vaginatum, *L.*

2150 ft.
Thalictrum alpinum, *L.* (to 1400).
Cardamine pratensis, *L.*
Potentilla Tormentilla, *Schenk.*
Saxifraga stellaris, *L.* (to 1550).
Galium saxatile, *L.*
Calluna vulgaris, *Salisb.*
Pedicularis sylvatica, *L.*
Empetrum nigrum, *L.* (to 1800).
Rumex Acetosa, *L.*
Luzula sylvatica, *Bich.*
Juncus effusus, *L.*
J. supinus, *Mœnch.*
J. squarrosus, *L.*
Scirpus cæspitosus, *L.*
Carex stellulata, *Good.*
Aira flexuosa, *L.*
Blechnum spicant, *Willd.*
Lastræa dilatata, *Presl.*

2100 ft.
Vaccinium Myrtillus, *L.*
Sparganium minimum, *Fries.*

2050 ft.
Stellaria uliginosa, *Murr.*
Montia fontana, *L.*
Veronica officinalis, *L.*
Euphrasia officinalis, *L.*

2000 ft.
Ranunculus Flammula, *L.*
Viola palustris, *L.*
Epilobium palustre, *L.*
Solidago Virga-aurea, *L.*
Menyanthes trifoliata, *L.*
Hymenophyllum unilaterale, *Willd.*

1900 ft.
Sedum Rhodiola, *DC.* (to 700).

1850 ft.
Nardus stricta, *L.*

1800 ft.
Vaccinium Vitis-Idæa, *L.* (to 1400).
Erica Tetralix, *L.*
Luzula campestris, *Willd.*
Carex binervis, *Sm.*
C. flava, *L.*
Triodia decumbens, *Beauv.*

1750 ft.
Erica cinerea, *L.*
Juniperus nana, *Willd.*
Polypodium Phegopteris, *L.*

1700 ft.
Drosera rotundifolia, *L.*
Lychnis Flos-cuculi, *L.*
Sagina procumbens, *L.*
Hieracium anglicum, *Fr.* (to 850).

1600 ft.
Ranunculus acris, *L.*
R. repens, *L.*
Cerastium triviale, *Link.*
Stellaria media, *With.*
Oxalis Acetosella, *L.*
Primula vulgaris, *Huds.*
Poa annua, *L.*
P. pratensis, *L.*
Athyrium Filix-fœmina, *Roth.*
Cystopteris fragilis, *Bernh.* (to 950).
Lastræa Filix-mas, *Presl.*

1550 ft.
Orobus tuberosus, *L.*
Prunella vulgaris, *L.*
Lysimachia nemorum, *L.*

1500 ft.
Silene maritima, *With.*
Carex ampullacea, *Good.*

1400 ft.
Hypericum Androsæmum, *L.*
Alchemilla vulgaris, *L.*, *var.* montana.
Valeriana officinalis, *L.*
Narthecium Ossifragum, *Huds.*
Juncus conglomeratus, *L.*

Anthoxanthum odoratum, *L.*
Lycopodium selaginoides, *L.*

1300 ft.

Chrysosplenium oppositifolium, *L.*
Gnaphalium dioicum, *L.*
Pedicularis palustris, *L.*
Rhinanthus Crista-galli, *L.*
Carex glauca, *Scop.*
Asplenium Trichomanes, *L.*

1100 ft.

Viola sylvatica, *Fries.*
Polygala depressa, *Wend.*
Hypericum pulchrum, *L.*
Scabiosa succisa, *L.*
Teucrium Scorodonia, *L.*
Juncus bufonius, *L.*
Aira cæspitosa, *L.*
Molinia cærulea, *Moench.*
Polypodium vulgare, *L.*
Asplenium Adiantum-nigrum, *L.*

1050 ft.

Leontodon autumnalis, *L.*
Lobelia Dortmanna, *L.*
Jasione montana, *L.*
Littorella lacustris, *L.*
Juncus acutiflorus, *Ehrh.*

1000 ft.

Ranunculus hederaceus, *L.*
Nymphæa alba, *L.*
Comarum palustre, *L.*
Callitriche hamulata, *Kutz.*
Bellis perennis, *L.*
Myrica Gale, *L.*
Potamogeton natans, *L.*
Rhynchospora alba, *Vahl.*
Carex præcox, *Jacq.*
Agrostis alba, *L.*

950 ft.

Fragaria vesca, *L.*
Rubus carpinifolius, *W. & N.*
Alchemilla vulgaris, *L.*
Sanicula europæa, *L.*
Polystichum aculeatum, *Roth*, *var.* lobatum.

900 ft.

Carduus pratensis, *Huds.*
Polygonum Hydropiper, *L.*
Schœnus nigricans, *L.*
Pteris aquilina, *L.*

850 ft.

Carduus palustris, *L.*
Crepis paludosa, *Mœnch.*
Centaurea nigra, *L.*
Plantago lanceolata, *L.*
Betula alba, *L.*
Carex pulicaris, *L.*

800 ft.

Nasturtium officinale, *R. Br.*
Prunus spinosa, *L.*
Fraxinus excelsior, *L.*
Stachys palustris, *L.*
Pinguicula vulgaris, *L.*
P. lusitanica, *L.*
Corylus Avellana, *L.*
Salix cinerea, *L.*
S. aurita, *L.*
Phragmites communis, *Trin.*
Lastræa Oreopteris, *Presl.*

750 ft.

Drosera anglica, *Huds.*
Utricularia minor, *L.*

700 ft.

Caltha palustris, *L.*
Linum catharticum, *L.*
Ilex Aquifolium, *L.*
Sarothamnus scoparius, *Koch.*
Vicia sepium, *L.*
Spiræa Ulmaria, *L.*
Pyrus Aucuparia, *Gært.*
Hedera Helix, *L.*
Lonicera Periclymenum, *L.*
Myosotis repens, *Don.*
Quercus Robur, *L.*
Populus tremula, *L.*
Salix Caprea, *L.*
Triglochin palustre, *L.*
Asplenium viride, *Huds.* (only station).
Osmunda regalis, *L.*
Equisetum sylvaticum, *L.*
E. limosum, *L.*

600 ft.

Senecio aquaticus, *Huds.*
Sparganium ramosum, *Huds.*
Iris Pseudacorus, *L.*

ON A COLLECTION OF BOMAREAS MADE BY M. E. ANDRÉ IN NEW GRANADA AND ECUADOR.

By J. G. Baker, F.R.S.

It is probably well known to all readers of this Journal who take an interest in the botany of South America that, in 1876, M. Edouard André undertook a mission of botanical exploration to Ecuador and New Granada, and that he traversed a large tract of country, and brought home an extensive and valuable herbarium. Two groups of plants to which he specially devoted his attention were *Bromeliaceæ* and Bomareas. He has already described, under the name of *Sodiroa*, the new genus of *Bromeliaceæ* which he discovered, and Prof. Morren has in hand the determination of his plants of this order. Of the Bomareas, the slopes of the Andes from Columbia southward to Peru are the head-quarters. He has kindly sent me his complete collection for comparison with Herbert's types, with the expression of a wish that I should give a general catalogue of the collection, and describe the new species which it contains. This I propose to undertake in the present paper. The specimens are excellent, and accompanied by careful notes made upon the living plants as regards general habit and the colour of the flowers; and they are often accompanied by sketches of the shape of the petals and sepals, and other dissections which he made when the specimens were fresh; so that in this way all has been done that could be done to facilitate their determination. As was proposed in my paper on the genera of *Amaryllidaceæ*, published in this Journal in 1878 (p. 169), I am treating *Wichuræa* (*Collania*) and *Sphærine*, which are kept up as genera by Herbert and Kunth, as mere sections of *Bomarea*, a view in which Mr. Bentham, who has lately worked out the *Amaryllidaceæ* for 'Genera Plantarum,' coincides.

Subgenus WICHURÆA.

B. glaucescens.—*Wichuræa glaucescens*, Roem.; Kunth Enum. v. 782.—Pichincha, at 4000 metres, and Chimborazo, at 3900 metres, *André* 4121 *bis!* There appear to be only three well-marked species of this section—*glaucescens*, distinguished by small flowers and linear leaves, of which *dulcis*, *puberula*, and *nutans* are varieties; and *involucrosa* and *andimarcana*, with large flowers and lanceolate leaves, the former with a simple and the latter with a compound umbel.

Subgenus SPHÆRINE.

B. linifolia. — *Sphærine* (?) *linifolia*, Kunth Enum. v. 786.—*Alstræmeria linifolia*, H. B. K.—Alto del Tabano, Andes of Pasto, alt. 3200 metres; Paramo of Chimbalan, near Pasto, alt. 3000 metres; Azufral, a volcano near the town of Tuquerres, alt. 3800 metres; all in New Granada, *André* 2989! "Erecta; 30–60 centimet. alta; folia glauca; umbellæ pauciflora; perigonii laciniæ exteriores scarlatinæ; interiores aureæ violaceo maculatæ; baccæ pubescentes, maturæ aureæ." André ad viv.

BOMAREA (*Sphærine*) PODOPETALA, n. sp. — Stems 1–1½ ft. long, slender, glabrous, suberect, with only a few adpressed rudimentary leaves in the lower half, closely leafy and flexuose in the upper half. Leaves 10–20, elliptical, with a short flattened resupinate petiole, rigid in texture, deltoid at the tip and base, glaucous, glabrous, the largest 2–2½ in. long, ¾–⅞ in. broad, with 5–7 prominent ribs on the under surface, with 2–4 faint ones between each. Flowers 2, on slender flexuose ascending bracteolate peduncles 1¼–2½ in. long. Sepals elliptical, obtuse, tinted scarlet, ½ in. long. Petals ¾ in. long, with a small obovate-cuneate crimson lamina and a long narrow claw. Stamens reaching to the tip of the petals; anthers oblong, 1-12th in. long.—Mountains of South Ecuador, at 3000 metres, *André* 4611 *bis!* Nearest to the Peruvian *S. brevis*, Herb., in which the leaves are larger and narrower, and the petals and sepals equal in length and quite different in shape.

BOMAREA (*Sphærine*) POLYGONATOIDES, n. sp. — Stems suberect, 1½ ft. long, glabrous, almost leafless in the lower half, closely leafy in the upper half, not at all flexuose. Leaves about 15, elliptical, with a short resupinate petiole, the largest 2½–3 in. long, ¾–1 in. broad, cuspidate, quite glabrous, moderately firm in texture, green on the upper side, glaucous beneath, with about 15 distinct ribs. Flowers 2, on slender erect glabrous peduncles ½ in. long. Ovary subglobose, green, glabrous, 1-12th in. long. Flowers orange-yellow outside, golden-yellow inside, not more than ¼ in. long, the petals and sepals both equal in length and oblong-spathulate. Stamens reaching to the tip of the petals.—Mountains of Southern Ecuador, at 3000 metres, *André* 4609 *bis!* Habit of *Polygonatum multiflorum*. Nearest to the Peruvian *S. distichophylla*, Herb.

The following is a key to the known species of this section:—

Leaves linear, 1–1½ in. long. 1. *B. linifolia*. 2. *B. minima*.
Leaves linear, 3–4 in. long. 3. *B. phyllostachya*.
Leaves lanceolate or oblong, 2–4 in. long.
Umbels simple, few-flowered.
Flowers very small. 4. *B. polygonatoides*.
Flowers ½–¾ in. long. 5. *B. brevis*. 6. *B. podopetala*.
7. *B. distichophylla*. 8. *B. secundifolia*. 9. *B. coccinea*.
Umbels simple, many-flowered. 10. *B. nervosa*.
Umbels compound. 11. *B. hispida*. 12. *B. angustipetala*.

Subgenus BOMAREA proper.

Group 1.—*Umbels simple. Petals and sepals equal in length.*

BOMAREA LANCIFOLIA, n. sp. — Stems wide-scandent, finely pubescent, terete, ¼ in. thick within a foot of the umbel. Leaves distant, ascending, with a short resupinate petiole, lanceolate, acuminate, 3–4 in. long, ⅓–½ in. broad three-quarters of the way down, narrowed gradually from the middle to the long point, moderately firm in texture, green and glabrous on both surfaces, with close fine unequal ribs. Flowers 30–40 in a dense simple umbel, with a few small lanceolate reduced leaves at its base; peduncles slender, ebracteolate, about an inch long, densely glanduloso-pubescent. Perianth-limb "beautifully scarlet or orange-yellow, with the segments golden-yellow at the edge"; sepals oblong spathulate, ¾–⅞ in. long; petals obovate-cuneate, with a long claw. Stamens as long as the petals; anthers orbicular.—Slopes of Mount Corazon, Andes of Quito, 2800 metres, and Canchacoto, western declivity of the Andes of Quito, 2000 metres, *André* 4110 *bis!* Nearest *B. angustifolia*, Benth., from which it differs by its much shorter pubescent peduncles, broad truncate petals, &c.

BOMAREA HARTWEGII, n. sp.—*B. simplex*, Benth. Pl. Hartweg. 156, non Herb.—Stems suberect, 1½ ft. long, leafless in the lower half or longer and subscandent, densely clothed with short coarse brown hairs. Leaves subdistant, shortly petioled, oblong, firm in texture, cuspidate, rounded at the base, 2–3 in. long, 1–1¼ in. broad, green and glabrous on the upper surface, densely pubescent beneath, with 30–40 ribs connected by distinct cross-bars. Flowers 4–8 in a simple umbel, with 1–2 minute bracts at the base, on densely pubescent slender peduncles 1–1½ in. long. Perianth-limb scarlet, ¾ in. long; sepals oblong-spathulate; petals as long as the sepals, oblong-unguiculate. Stamens just exserted; anthers oblong-orbicular, 1-12th in. long.—Andes of South Ecuador, alt. 3000 metres, *André* 4603 *bis!* In habit this is intermediate between *Sphærine* and *Bomarea* proper. Herbert's *B. simplex* is a Peruvian plant, gathered by Matthews (No. 786), with thin leaves, longer bracteolate glabrous peduncles, and much larger flowers.

B. platypetala, Benth.; Kunth Enum. v. 804.—Mountains of Central Ecuador, 3000 metres, *André* 4607 *bis!* "Caules debiles; flores extus rosei, apice laciniarum albido-virides, intus viridescentes." Probably identical with Herbert's *B. uncifolia*, Bot. Reg. 1842, Misc. No. 88.

BOMAREA DISSITIFOLIA, n. sp.—Stems slender, glabrous, suberect, 1½ ft. long or longer, and slightly scandent. Leaves distant, shortly petioled, oblong-lanceolate, acute, rounded at the base, 2–3 in. long, under an inch broad, firm in texture, green and glabrous on both surfaces, with about 40 close veins without any cross-bars. Flowers 6–8 in a simple umbel, with several small bracts at the base; peduncles slender, ebracteolate, densely pubescent, 1–1½ in. long. Perianth violet outside, red-orange inside, ¾ in. long; sepals linear-oblong; petals oblong, unguiculate, not longer than the sepals. Stamens just exserted.—Tambo de Savanilla, Andes of Ecuador, 2800 metres, *André* 4522 *bis!* Allied to *B. tomentosa*, Herb. (*Alstromeria tomentosa*, Ruiz et Pavon Fl. Peruv. t. 292 A), of which there is a type specimen at the British Museum, and which I believe to be conspecific with *B. densiflora*, Herb. Amaryll. t. 46, fig. 4.

Bomarea pachyphlebia, n. sp. — Stems slender, wide-scandent, glabrous, flexuose. Leaves subdistant, shortly petioled, oblong-lanceolate, acuminate, 2–2½ in. long, ½–⅝ in. broad, firm in texture, green and glabrous on the face, paler and obscurely pilose below, with about 40 thick veins which fill up the whole surface. Flowers 6–8 in a simple umbel, with a few small lanceolate reflexing bracts at the base; peduncles ebracteolate, densely glandular-pubescent, under an inch long. Perianth-limb scarlet outside, orange-yellow within, ⅝ in. long; sepals oblong-spathulate; petals obovate-cuneate, with a claw as long as the lamina. Stamens as long as the petals.—Mountains of Southern Ecuador, 3000 metres, *André* 4601 *bis!* Closely allied to the last species.

B. oligantha, Baker in Gard. Chron. 1877, ii., 648.—Dolores in the Valley of the Cauca, New Granada, 1820 metres, *André*. Closely allied to *B. Caldasiana*, from which it differs by the petals being scarcely longer than the sepals.

Bomarea longipes, n. sp. — Stems very long, slender, terete, glabrous, wide-scandent. Leaves with a channelled petiole about ½ in. long; blade ovate-oblong, acuminate, broadly rounded at the base, 4–5 in. long, 18–21 lines broad, firm in texture, green and glabrous above, with about 50 unequal densely pilose raised ribs below. Flowers 7–8 in an umbel bracteated by several unequal reduced leaves at the base; peduncles 5–6 in. long, obscurely glandular-pubescent, with a single rudimentary bracteole below the middle. Perianth-limb violet outside, orange-yellow inside; sepals oblong-spathulate, 1¼ in. long; petals oblong-unguiculate, with red-brown blotches on the face. Stamens as long as the petals; anthers oblong, ⅙ in. long.—Cruz Grande, Andes of Southern Ecuador, 2800 metres, *André* 4614! Of published species this is nearest *B. angulata*, Benth., from which it differs by its lax umbels, long peduncles and petioles, and leaves densely pilose beneath.

Bomarea goniocaulon, n. sp. — Stems wide-scandent, acutely angled. Leaves shortly petioled, lanceolate, very acuminate, 4–6 in. long, ⅓–½ in. broad near the base, moderately firm in texture, green and glabrous on both surfaces, closely finely veined. Flowers 30 or more in a simple umbel, with a dense cluster of large and smaller leaves at the base; peduncles 2–3 in. long, ebracteolate, glabrous. Perianth-limb 1¾–2 in. long; sepals oblong-lanceolate, acute, rose-red at the base, greenish upwards; petals not longer than the sepals, oblong-unguiculate, with a claw as long as the blade, greenish, maculate with violet on the face. Stamens not protruded.—Foot of Mount Corazon, Andes of Quito, 2500 metres, *André* 3646! Allied to *B. multipes*, Benth.

Group 2.—*Umbels simple. Petals longer than the sepals.*

B. Caldasiana, Herb.—Rio Piendamo, in the Cauca Valley, New Granada, 1350 metres, *André* 2749! Ilarra, at the foot of Mount Imbabura, Ecuador, 2245 metres, *André* 3327 *bis!* Guaranda, on the western declivity of Chimborazo, 2660 metres, *André* 3991!

Bomarea Kalbreyeri, n. sp. — Stems slender, wide-scandent, pubescent towards the top. Leaves shortly petioled, oblong, acute, rounded at the base, 2–3 in. long, 9–15 lines broad, firm in texture, green and glabrous on the upper surface, densely pilose beneath, with 15–20 veins on each side of the midrib. Flowers 12–15 in a dense simple umbel, with several small lanceolate bracts at the base; peduncles ebracteolate, densely pubescent, ¾–1¼ in. long. Sepals red, oblong-spathulate, ⅝–¾ in. long. Petals 1¼ in. longer than the sepals, obovate-cuneate, with a long claw, reddish yellow, ⅓ in. broad at the tip. Stamens as long as the petals.—Near the town of Tuquerres, Andes of Pasto, New Granada, *André* 3621 *bis!* At the foot of Guadalupe Mountain, near Bogota, 2900 metres, *André* 1251! Chico, New Granada, at 10,000 ft., *Kalbreyer*, 2001! A near ally of the well-known *B. Caldasiana*, Herb. (Bot. Mag. t. 5442).

B. conferta, Benth.; Masters in Gard. Chron. 1882, i. 186, with figure.—*B. patacoensis*, Herb.—Near the town of Popayan, in the Valley of the Cauca, New Granada, 1800 metres, *André* 3016 *bis!* "Flores læte coccinei." Foot of Mount Corazon, Andes of Quito, 2500 metres, *André* 3645! "Caules et folia superiora (floralia) atro-violaceæ. Perigonii laciniæ exteriores aurantiaceæ; interiores luteæ, maculis atro-violaceis punctatæ"; and a similar plant with peduncles not more than an inch long (var. *brachypoda*), which will very likely prove a distinct species, from the Boqueron of Quindio, in the Central Cordillera of the Andes of New Granada, at 3580 metres, *André* 1451 *bis!* and Palmillo, on the eastern declivity of Mount Quindro, at 1960 metres, *André* 2026 *bis!** This last form we have already at Kew, from Bogota, *Holton* 145! and I understand from Dr. Masters it has lately been brought into cultivation by Messrs. Shuttleworth and Carder.

Bomarea Andreana, n. sp.—Stems wide-scandent, slender, terete, pubescent upwards. Leaves distinctly petioled, oblong, acute, rounded at the base, 3–5 in. long, ¾–1 in. broad, moderately firm in texture, green and glabrous on the upper surface, finely pilose beneath, closely ribbed. Flowers 10–15 in a simple umbel, with several small lanceolate leaves at the base; pedicels 1½–2 in. long, pubescent, sometimes bracteolate. Flowers yellow or tinged red; sepals oblong-spathulate, 1¼ in. long; petals obovate, with a long claw, 1½ in. long. Stamens reaching to the tip of the petals.—Banks of the Rio Piendamo and Rio Palacé, near Popayan, New Granada, 1900 metres, *André* 2756! Guaduas, near Bogota, on the western declivity of the Eastern Andes of New Granada, *André* 674! San José, Province of Antioquia, 7000–8000 ft., *Kalbreyer* 1502! This fine novelty comes in between *B. Caldasiana*, *conferta*, and *lutea*.

B. lutea, Herb.—La Ceja del Quindio, in the Central Cordillera of New Granada, 3000 metres, *André* 2181! "Flores extus purpureo-aurantiaci. Laciniæ perigonii interiores aureæ violaceo punctatæ. Species pulcherrima."

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* Since the above was written this has been described and figured by Dr. Masters in Gard. Chron., 1882, vol. i., p. 668, fig. 102, under the name of *Bomarea frondea*.

B. pardina, Herb.—Canchacoto, Yamburga, on the road to Manabi, in the Western Andes of Ecuador; also Mendiacion, on the eastern declivity of the Central Cordillera of the Andes of New Granada, *André* 3787! "Robusta, scandens. Folia ampla, ovata, acuta; floralia consimilia, rosulantia. Umbella ampla subsphærica densa. Perigonii laciniæ exteriores roseæ apice brunneo-virides; interiores candidæ violaceo punctatæ. Bacca scarlatina. Species omnium pulcherrima."

Group 3.—*Umbels compound.*

B. edulis, Herb.—La Ceja, at the top of Mount Quindio, New Granada, 3200 metres, *André* 2191! Between Guaduas et Villeta, Eastern Cordilleras of New Granada, 700 metres, *André* 677!

BOMAREA DIFFRACTA, n. sp.—Stems glabrous, wide-scandent. Leaves with a petiole above $\frac{1}{2}$ in. long, oblong-lanceolate, acuminate, 6–8 in. long, 21–24 lines broad, green and glabrous on both surfaces, moderately firm in texture, with 40–50 close veins. Umbel with few branches, 1–$1\frac{1}{2}$ ft. long, each bearing besides the end one 2–4 flowers on short (1–$1\frac{1}{2}$ in.) ascending pedicels, with a reflexed leafy lanceolate bract at the base. Perianth 21 lines long; sepals oblong-spathulate, violet, green at the tip; petals not protruded, obovate-cuneate, with a long claw, purplish green, with copious claret-brown spots on the face. Stamens as long as the petals.—Tambores, on the western declivity of Mount Quindio, New Granada, 658 metres, *André* 2310! Allied to *B. Carderi* and *formosissima*. Remarkable for its very long, many-flowered umbel-rays.

A CONTRIBUTION TOWARDS A FLORA OF THE TEIGN BASIN, S. DEVON.

BY THE REV. W. MOYLE ROGERS, F.L.S.

(Continued from p. 183.)

Anagallis cærulea, Sm.—Trusham, on Black Lea Down; two plants, 1880.

Centunculus minimus, L.—On Haldon, in several places. Bovey Heathfield (Fl. Dev.).

Plantago lanceolata, L., b. *Timbali*.—Ashton; Trusham; Wolborough Common. An occasional colonist in and near cultivated land.

P. Coronopus, L.—Christow Down; Trusham; Haldon. Frequent on rocky spots and bare downs.

Chenopodium polyspermum, L.—Ashton village, *Briggs*; Hennock, in a potato field below Canonteign Down, in great quantity, 1881.

C. Bonus-Henricus, L.—Near Moreton, by the ruins of an old farmhouse and garden, 1881. East Ogwell, in the village street, 1881. Denizen.

Atriplex erecta, Huds.—Trusham, frequent.

A. deltoidea, Bab.—Chudleigh; Chudleigh Knighton; Teigngrace. Uncommon.

A. Smithii, Syme.—Moreton; Ashton, *Briggs*.

Rumex pulcher, L.—Trusham, abundant in shallow rocky soil; about Chudleigh (Fl. Dev.), especially on "The Rocks."

R. pratensis, M. & K.—Trusham. Probably overlooked elsewhere.

Polygonum lapathifolium, L.—Moreton; Trusham; Chudleigh (Fl. Dev.); Chudleigh Knighton; Teigngrace. Usually in small quantity.

Buxus sempervirens, L.—Lanes about Trusham and Chudleigh. Frequent in the hedges, where it flowers freely when uncut. No doubt planted in every case.

Euphorbia exigua, L.—Ashton and Trusham. Colonist. Locally abundant.

Parietaria diffusa, Koch.—Ashton; Chudleigh Rocks, and elsewhere about Chudleigh; Ilsington, *Briggs*. Decidedly local.

Urtica urens, L.—About Moreton; Hennock; Trusham; Bovey Tracey. Seldom at any distance from houses.

Humulus Lupulus, L.—Moreton; Trusham; Chudleigh (Fl. Dev.); Bridford, *Briggs*. Usually native, I think.

Quercus Robur, L., c. *sessiliflora*.—Moreton Wood above Fingle Bridge, *Briggs;* Dunsford Bridge; Haldon; Hennock. Apparently very uncommon.

Carpinus Betulus, L.—Trusham, Hennock, and Chudleigh Woods and lanes by the river; rather frequent.

Betula alba, L., a. *verrucosa*.—Near Dunsford, *Briggs;* Ashton; Haldon; Kingsteignton; b. *glutinosa*.—Common. c. *pubescens*.—Holly Street, near Dunsford, *Briggs*.

Myrica Gale, L.—Haldon, local; Manaton (Rav. Fl.); Bovey Heathfield (Fl. Dev.); Knighton Heath.

Populus tremula, L. — Haldon, towards Doddiscombsleigh, *Briggs;* Knighton Heath, *Briggs*.

Salix fragilis, L.—Trusham, in two or three places; probably planted in all. I have given so little time to the study of this genus that no great reliance should be placed in my notes on the distribution of its species in the district. *Cinerea* and *aurita* are common and generally distributed; *Caprea*, I think, is not so frequent.

S. viminalis, L.—Near Kingsteignton, and in a few other places, but usually planted.

S. ambigua, *?* Ehrh.—Bovey Heathfield (Stewart's 'Flora of Torquay'), by roadside, Sept. 5th, 1881, *Briggs*. Without flower or fruit.

S. repens, L.—Ashton; Bovey Heathfield (Fl. Dev.); Knighton Heath.

Typha latifolia, L.—Bovey Heathfield. Old clay-pits between Kingsteigton and Chudleigh (Fl. Dev.).

Sparganium ramosum, Huds.—By the Teign at Ashton; in Bramble Brook and in meadows at Trusham; between Moreton and Lustleigh; by the Bovey; Newton Abbot. Rather common.

S. simplex, Huds.—About Moreton; Christow, pool in Teign Valley, in plenty; Hennock, by the reservoir, in immense quantity; Trusham, meadows; Teigngrace.

Potamogeton natans, L.—Between Heytor and Manaton; in pools near Kingsteington. I believe that I have also seen this segregate on Haldon (as well as *P. polygonifolius*, Pour.), and on pools in the Teign Valley, but I have no notes to that effect.

P. polygonifolius, Pour.—Christow; Knighton Heath.

P. pusillus, L.—Pools near Newton Abbot, and at Preston, near Kingsteignton.

P. pectinatus, L.—With the last-named in both stations.

Triglochin palustre, L.—Near Newton Abbot.

Alisma ranunculoides, L.—Old clay-pit at Preston, near Kingsteignton (Fl. Dev.).

Orchis pyramidalis, L.—Chudleigh Rocks (Fl. Dev.).

O. Morio, L.—In grassy places in Ashton, Trusham, and Chudleigh, locally abundant; Haldon, near the racecourse, a few plants only, 1881.

O. latifolia, L.—Christow; Hennock; Trusham; Chudleigh (Fl. Dev.). Rather local.

Habenaria chlorantha, Bab.—Wood at Chudleigh Rocks (G. W. Gissing in Rav. Fl.), in fair quantity; wood at Denbury.

Spiranthes autumnalis, Rich.—Canonteign Down; Ashton, in "Quiet Land," and the Rectory lawn; Trusham, on Black Lea Down, and elsewhere; especially abundant near Chudleigh.

Listera ovata, Brown.—Ashton, in "Upper Quiet Land"; Haldon (Rav. Fl.); Chudleigh Rocks (Fl. Dev.). Uncommon.

Neottia Nidus-avis, Rich.—Ashton, in small copse near the Rectory, only one or two plants, 1879.

Epipactis latifolia, Auct.—Between Ashton and the top of Haldon, occasionally; and becoming abundant about the "Belvidere" tower; about Ranscombe, near Chudleigh (Fl. Dev.).

Iris fœtidissima, L.—Between Trusham and Chudleigh, and all round Chudleigh (Fl. Dev.), in considerable quantity.

Narcissus Pseudo-narcissus, L.—In extraordinary quantity on both sides of the Teign, uninterruptedly for several miles above Chudleigh Bridge. Elsewhere in the district I have had no opportunity of noting its distribution. Native, I should think.

Galanthus nivalis, L.—Trusham, in marshy bushy ground by the Teign, but only for a short distance and in small quantity. Denizen.

Polygonatum multiflorum, All.—Ashton, on a bushy hedge-bank in the lane between the Rectory and the Church. Three or four plants flowering every year, at some distance from any garden and possibly native.

Ruscus aculeatus, L.—Between Trusham and Chudleigh. Perhaps native.

Allium vineale, L., c. *compactum*. Black Lea Lane, Trusham; Chudleigh Rocks.

Narthecium Ossifragum, Huds.—Near Moreton; Haldon (Fl. Dev.); Bovey Heathfield (Stewart's Flora of Torquay); Knighton Heath. Occurs probably in the more peaty parts of all the bogs.

Luzula Forsteri, DC.—Below Dunsford Bridge, this is, after *L. campestris*, DC., far the commonest *Luzula*, the deep lanes being especially full of it. I have no notes of its distribution in the district above Dunsford Bridge, which I have had no opportunity of visiting in spring or early summer.

L. pilosa, Willd.—Near Dunsford Bridge; Nitton Cleave; Haldon; near Chudleigh (Jones's Bot. Tour, App.); especially on "The Rocks"; Ilsington, *Briggs*. Usually in no great quantity. In 1877 Mr. Briggs pointed out to me the var. *Borreri* near Pen Woods, and I have, I think, observed it occasionally elsewhere.

L. sylvatica, Bich.—Holly Street; Moreton; by the river at Dunsford Bridge and Ashton; Ugbrook Woods. Local.

Juncus supinus, Mœnch.—Near Moreton; Dunsford Bridge; Ashton; Bovey Heathfield (Stewart's Flora of Torquay).

J. squarrosus, L.—Haldon (Rav. Fl.).

Rhynchospora alba, Vahl.—Haldon; Knighton Heath (b. *sordida*).

Scirpus palustris, L.—Near Moreton. My only record, but no doubt elsewhere.

S. multicaulis, Sm.—Haldon; Bovey Heathfield (Fl. Dev.); Knighton Heath.

S. cæspitosus, L.—Near Fernworthy, *Briggs;* and in the same stations as the last, and much more abundant.

S. parvulus, R. & S.—Newton Abbot, in muddy creek in the estuary, Sept. 1880, in considerable quantity, but without flower or fruit, *Briggs*.

S. fluitans, L.—Close to a bridge over the Bovey near Middleton Hill, *Briggs;* Haldon (Mr. Parfitt in Rav. Fl.); Bovey Heathfield (Fl. Dev.); Knighton Heath (Stewart's Flora of Torquay); Teigngrace.

S. Savii, S. & M., b. *monostachys*.—Between Chudleigh and Crocombe Bridges, in roadside clayey ditch.

S. setaceus, L.—Ashton; Haldon; marshy ground about Bottor; Bovey Heathfield.

S. Tabernæmontani, Gmel.—Near Newton Abbot.

S. maritimus, L.—Near Newton Abbot.

S. sylvaticus, L.—Trusham, by the river, and in a meadow by Bramble Brook; in meadow at Ranscombe, between Trusham and Chudleigh.

Eriophorum vaginatum, L.—Haldon (Fl. Dev.).

E. angustifolium, Roth.—Bovey Heathfield (Mr. Stewart in Rav. Fl.).

Carex pulicaris, L.—Ashton; "Quiet Land," &c.; Haldon (Fl. Dev.); Knighton Heath (Stewart's Flora of Torquay).

C. paniculata, L.—Bovey Valley, between Beetor Bridge and Dartmoor, *Briggs;* Nitton Cleave; Trusham; Haldon (Mr. Parfitt in Rav. Fl.); by Pen Wood.

C. vulpina, L.—Newton Abbot. I have no note of having seen this farther inland.

C. muricata, L.—Moreton; Ashton; Trusham, &c. One of the most frequent species in the drier spots of the main valley.

(To be continued.)

A CHINESE *STEPHANANDRA.*

By H. F. Hance, Ph.D., F.L.S., &c.

The genus *Stephanandra* was established about forty years ago by the late Professor Zuccarini, of Munich, on a plant brought from Japan by Dr. von Siebold, and which had been originally described by Thunberg under the name of *Spiræa incisa*.* Zuccarini's description † was accompanied by a very good analytic plate, but I believe the plant itself has never to this day been figured. No additional species had been added to the genus, notwithstanding active collecting in Japan, until three years ago, when M. Franchet found two new ones amongst Dr. Savatier's collections ‡; but the genus still remained exclusively restricted to Japan and the adjoining coast of Korea. It was therefore with some pleasure that, in looking over lately a small set of Chinese plants reeeived from Mr. T. L. Bullock, I encountered a specimen which Mr. F. B. Forbes and he had taken for *Spiræa callosa*, Thunb., but which I at once saw to be an uudescribed *Stephanandra*. Of this a diagnosis is subjoined, briefer than usual, because I believe the flowers to be singularly alike in all the species. M. Franchet describes his *S. gracilis* and *S. Tanakæ* as having fifteen stamens, but M. Maximowicz asserts § that in the last-named, which alone of the two he had examined, there are twenty. I have not been so fortunate as to see either. The present species agrees with Zuccarini's original one in its decandrous flowers, but it is distinguishable at a glance by its larger, differently shaped, and less-incised leaves, and by its ampler and more compound inflorescence.

Stephanandra chinensis, sp. nov.—Ramulis flexuosis cortice glabro pallide brunneo obductis, stipulis lineari-oblongis acutis ciliatis, foliis ovato-lanceolatis inæqualiter duplicato-serratis apice in acumen argute serratum exquisite attenuatis 6–7-costulatis supra læte viridibus sparsim pilosulis subtus pallidis magis præsertim secus nervos pilosis 2–2½ poll. longis ¾–1 poll. latis petiolo bilineali pubescente, floribus in racemos compositos multifloros folium æquantes dispositis circ. 4 millim. diametro decandris ejusdem omnino structuræ ac *S. flexuosæ*, pedicellis flore parum longioribus bractea lineari duplo breviore stipatis.

In prov. An-hwei, circa urbem Wu-hu, Maio 1881, leg. am. T. L. Bullock. (Herb. propr. n. 21998).

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* Fl. jap. 213.

† Abhandl. Münch. Akad. 2 Kl. iii. 739, t. iv. 2.

‡ Enum. pl. jap. ii. 3321.

§ Acta hort. Petrop. vi. 218.

THE FLORA OF KERSAL MOOR, NEAR MANCHESTER.

By J. Cosmo Melvill, M.A., F.L.S.

Few suburban resorts are better known to the resident in Manchester than Kersal Moor. Situated as it is on high sandy ground to the north of the city, about two and a-half miles from the Exchange, and formerly extending as far as the cliff which overlooks the valley of the Irwell, it has played a more or less conspicuous part in the local annals, at one epoch being the scene of a military encampment, as during the Chartist riots (there are still to be noticed scanty remains of earthworks); and at another, and that for many years, being the spot where the Manchester races were held, traces of the race-course are still plainly visible. And at all times it has been to the citizen, pent up in a close and smoky street, a haven of refuge for the time being, where he may inhale a purer and more invigorating air. Although surrounded on two sides at least by buildings, mostly private residences, it still preserves its earlier natural features to a great extent intact.

Kersal Moor, as it at present exists, with the three or four fields adjoining, comprises about twenty-five or twenty-six acres, and has been very recently let by the owner of the property to the Salford Corporation for a term of twenty-one years. This body has recently encircled the Moor with a ring fence, and placed seats on it, in the endeavour to make it assume the character of a public park. They have also issued stringent regulations against the plucking of heather and other plants and shrubs.

The following list, the result of five or six years researches from time to time, gives a fairly exhaustive enumeration of the Phanerogamia of the Moor, which, it must be understood, comprises, besides the Moor proper, the fields sloping down to Singleton Brook, between the Moor and the road leading to Rainsough village, in the parish of Prestwich.

The Flora is mainly interesting as showing what may still be found on the outskirts of the largest manufacturing city in the kingdom. It might have been expected that the smoke of Manchester, and the fumes emanating from chemical manufactories, &c., in Salford, might have seriously diminished its natural productions; but that this is not the case the following list, consisting of about 240 species, or about one-eighth of our native Phanerogamic Flora, amply testifies.

Anemone nemorosa, L.—Sparingly, among meadow-grass in the field next the Moor; very abundant in the neighbourhood.

Ranunculus peltatus, Fries.—Sparingly in swamps. Not noticed since 1879.

R. cœnosus, Sm. (*R. Lenormandi*, F. Schultz).—Ditches; not uncommon in the neighbourhood, though rare by Singleton Brook, at the edge of the Moor.

R. Flammula, L.—Abundant in the boggy portion of the Moor, by Singleton Brook.

R. acris, L.

R. repens, L.

R. bulbosus, L.

R. Ficaria, L.

Caltha palustris, L.

Corydalis claviculata, DC.—Has occurred in 1879, close by the Moor; perhaps a casual.

Cardamine pratensis, L.

C. hirsuta, L.

[I have not noticed *C. amara*, L., within the prescribed limits of this paper, but it is common not half-a-mile farther away.]

Nasturtium officinale, Br.—Bogs.

N. palustre, DC.

Armoracia rusticana, Rupp.—An escape.

Capsella Bursa-Pastoris, L.

Barbarea intermedia, Bor.—In cultivated ground. This seems the prevailing form in the Prestwich district, but it is nowhere very common.

Viola palustris, L.—Not uncommon on the Moor, but not always flowering.

V. tricolor, L., and var. *β. arvensis*.—In cultivated ground, variable in their appearance.

[*Drosera rotundifolia*, L., mentioned in Buxton's 'Guide' as occurring here, has not been found for many years. I hear it is irreaocably extinct.]

Lychnis diurna, Sibth.—Common.

L. Flos-cuculi, L.—Boggy parts of the Moor; frequent.

Cerastium triviale, Link.

C. semidecandrum, L.—Is recorded as growing here, but we have not personally observed it.

Stellaria media, With.

S. Holostea, L.

S. graminea, L.

S. uliginosa, Murr.—By Singleton Brook.

Arenaria trinervia, L.—A characteristic plant of the neighbourhood.

A. serpyllifolia, L., *β. leptoclados*, Bab.—Casual.

Sagina procumbens, L.

S. apetala, L.—Old walls and paths.

Spergula arvensis, L.—Abundant. The prevailing weed in cultivated ground.

Spergularia rubra, Fenzl.—In sandy ground by the old racecourse.

[Though just outside the limits, the discovery we made last year (1881) of *Dianthus deltoides*, L., at the Prestwich Hills, not more than half-a-mile from the Moor, seems worth recording here. There was only one patch of the plant, and it would seem not to have been planted there.]

Montia fontana, L.—Abundant by springs on the Moor, towards Singleton Brook.

Hypericum humifusum, L.—Occurred sparingly in 1879, but has not since then been observed.

Linum usitatissimum, L.—A casual; noticed in 1877, but not since.

Oxalis Acetosella, L.—Very uncommon on the Moor, but frequent in the neighbourhood.

[*O. corniculata*, L., occurs as a garden weed not far off the Moor.]

Acer Pseudo-platanus, L.—Common, but originally planted.

Ulex Gallii, Planch.—Now nearly extinct on the Moor. It has been gradually disappearing for some years.

Sarothamnus scoparius, Koch.—Also rapidly becoming extinct.

Trifolium pratense, L.

T. repens, L.

T. medium, L.—Is common in the lanes surrounding the Moor.

Lotus corniculatus, L.

L. major, Scop.—Boggy part of the Moor.

Ornithopus perpusillus, L.—Now very rare. It seems to have been more frequent originally.

Vicia hirsuta, Koch.

V. Cracca, L.—Abundant in one portion of the field by Messrs. Bleackley's Bleach-works.

V. sepium, L.

V. angustifolia, Roth.

Lathyrus pratensis, L.

[*Orobus tuberosus*, L., is extremely abundant in some of the cloughs in the neighbourhood, but we have not found it actually on the Moor].

Prunus spinosa, L.

P. avium, L.—Occurs in a field close by the Moor.

Spiræa Ulmaria, L.

Sanguisorba officinalis, L.—Near Singleton Brook, amongst grass. Rare.

Alchemilla arvensis, L.—A weed of uncertain appearance.

A. vulgaris, L.—Common.

Potentilla Fragariastrum, Ehrh.

P. Tormentilla, Schrenk.—Heathy portion of the Moor; abundant.

P. procumbens, Sibth.—This is a characteristic plant of the district, often found with but four petals, but generally with five. It is abundant in the neighbourhood, seeming at home in peaty meadow lands that have been reclaimed from the Moor.

P. reptans, L.—Quite rare in comparison with the last-named.

P. Anserina, L.—In no great abundance.

Rubus suberectus, Anders.—Boggy ground, rare; and not seen in 1881.

R. sp. of *fruticosi* section.—Heathy ground; frequent.

Cratægus Oxyacantha.—L.

Epilobium hirsutum, L.—Very fine by Singleton Brook.

E. parviflorum, Schreb.—" Kersal Moor," Buxton's Guide.

E. obscurum, Schreb.

E. palustre, L.

Callitriche verna, L.

C. hamulata, Kütz.

Hydrocotyle vulgaris. L.—Boggy part of the Moor; frequent.

Ægopodium Podagraria, L.—An escape. Not seen since 1878.

Carum Carui, L.—One specimen found in the next field to the south of the Moor, by the church, in 1870.

Æthusa Cynapium, L.—As a weed, common in the corn-field by Kersal Moor Hotel.

Angelica sylvestris, L.—Boggy ground; frequent.

Heracleum Sphondylium, L.—Abundant. I have once found also the var. *β. angustifolium*, within a stone's-throw of the Moor, but not noticed it for four years.

Chærophyllum Anthriscus, Lam.—Very common.

Scandix Pecten-Veneris, L.—Rare in the cultivated portion of the Moor.

Sambucus nigra, L.—Abundantly planted in the neighbourhood.

Galium saxatile, L.—Abundant on the Moor, and more luxuriant than usual.

G. Aparine, L.

G. palustre, L.

Valeriana dioica, L.—It is interesting to find this plant still holding its own in the most boggy portion of the Moor, by Singleton Brook.

Scabiosa Succisa, L.

Carduus lanceolatus, L.—Rare.

C. palustris L.—Very abundant. Varying with white flowers occasionally.

C. arvensis, Curt.

Arctium majus, Schreb.

Centaurea nigra, L.

C. Cyanus, L.—Occasionally in corn-fields which were originally part of the Moor.

Chrysanthemum segetum, L.—Ditto.

C. Leucanthemum, L.—Abundant in meadows by the Moor.

Matricaria inodora, L.

Achillea Millefolium, L.— A fine variety with crimson flowers, and more luxuriant growth, which preserves its characteristics in cultivation, is not infrequent in the peaty meadows which have been reclaimed from the Moor, growing with the usual form.

A. Ptarmica, L.—Common. In the neighbourhood of Manchester this plant is almost, if not quite, the last to be eradicated. It is to be found in the most densely populated quarters, wherever a bit of waste ground exists, provided the ground be of a peaty or moory character. And towards the smokiest and most undesirable portion of the city, viz., towards the north-east, the ground is mainly of that character, as it is round the whole of Oldham.

Gnaphalium uliginosum, L.

Senecio vulgaris, L.

S. sylvaticus, L.—Common.

S. Jacobæa, L.

S. aquaticus, Huds.

Bidens tripartita, L.—Boggy ground by Singleton Brook.

Inula dysenterica, L.—Formerly not infrequent, but I have not seen it since 1880.

Bellis perennis, L.

Solidago Virga-aurea, L.

Tussilago Farfara, L.—A most pernicious weed, abounding everywhere; and almost impossible to eradicate where once it has taken hold.

Petasites vulgaris, Desf.—Not common.

Lapsana communis, L.

Hypochœris radicata, L.

Leontodon hirtus, L.

L. hispidus, L.

L. autumnalis, L.

Taraxacum officinale, Wigg.

Crepis virens, L.

C. paludosa, Mœnch.—In the most boggy portion of the Moor; frequent.

Hieracium Pilosella, L.

H. boreale, Fries.—Very common in the neighbourhood.

Campanula rotundifolia, L.—Common.

Vaccinium Myrtillus, L.—Abundant on the uncultivated portion of the Moor; especially where the ground slopes down towards the Bleach Works.

Erica Tetralix, L.—Getting very scarce, though I observed in 1881 one or two good plants in the boggy portion of the Moor, near the footpath leading to the Works.

[*Erica cinerea*, L., has not been seen for many years.]

Calluna vulgaris, Sibth.—Very abundant.

Fraxinus excelsior, L.

Ligustrum vulgare, L.—Only where planted.

Convolvulus sepium, L.—Common in hedgerows.

Digitalis purpurea, L.—A characteristic plant of the neighbourhood.

Veronica Chamædrys, L.

V. Beccabunga, L.

V. officinalis, L.—Not very common; on the high ground to the north of the Moor.

V. serpyllifolia, L.

Bartsia Odontites, Huds.

Rhinanthus Crista-galli, L.

Prunella vulgaris, L.

Mentha aquatica, L.

Stachys palustris, L.—With the last, by Singleton Brook.

S. sylvatica, L.

Galeopsis Tetrahit, L.—The waste ground and cornfields by the Moor.

Lamium purpureum, L.

Myosotis palustris, With.—Abundant and remarkably fine by Singleton Brook.

Anagallis arvensis, L.—Cultivated ground.

Plantago major, L.

P. lanceolata, L.

Chenopodium album, L.

Atriplex angustifolia, Sm.

Rumex conglomeratus, Murr.

R. obtusifolius, Auct.

R. crispus, L.

R. Acetosa, L.

R. Acetosella, L.—A most abundant and troublesome weed in this district.

Polygonum Convolvulus, L.

P. aviculare, L.

P. Hydropiper, L.

P. Persicaria, L.—Very abundant in waste ground.

P. lapathifolium, L.—Rare; only once seen.

P. Bistorta, L.—A characteristic plant of the district.

[I have never noticed any member of the *Euphorbiaceæ* on the Moor.]

Ulmus montana, Sm.—Planted.

Quercus Robur, L.

Var. *pedunculata*, Ehrh.—A form of scrub oak is native and plentiful in most of the Lancashire cloughs or dales. There is evidence that this oak likewise abounded formerly in the clough through which Singleton Brook runs. Indeed, the name Kersal would appear to signify oak-grove.

Fagus sylvatica, L., *Corylus Avellana*, L., *Alnus glutinosa*, L., *Betula alba*, L., *Populus nigra*, L., *P. tremula*, L.—All these trees occur either on the Moor or in its immediate neighbourhood.

Salix alba, L.

S. viminalis, L.

S. cinerea, L.

S. Caprea, L.

Sparganium ramosum, Huds.—Abundant and very fine by Singleton Brook.

Lemna minor, L.

Arum maculatum, L.—Occurs sparingly on the confines of the Moor, in hedge skirting the road to Rainsough village.

Potamogeton natans, L.

P. crispus, L.—In reservoir of Bleackley's Works.

P. pusillus, L.

Triglochin palustre, L.—Boggy parts of the moor by Singleton Brook.

Alisma Plantago, L.—This plant holds its own almost into the very heart of Manchester, wherever there is a piece of water, however stagnant. It is especially frequent in the brickfields, &c., towards Oldham and elsewhere.

Elodea canadensis, Mich.—Reservoir, Bleackley's Works, bordering on the Moor.

Crocus vernus, All.—Very sparingly, and perhaps extinct on the Prestwich hills bordering the Moor.

C. nudiflorus, Sm.—Most abundant, and a characteristic plant of the locality in the meadow land by Singleton Brook, and also more rarely by Bleackley's Works.

Scilla nutans, Sm.—Meadow land, &c. This plant seems, with the *Equisetum sylvaticum*, to especially affect the Lancashire cloughs.

Luzula pilosa, Willd.

L. campestris, DC.—Exceedingly abundant.

L. multiflora, DC., *β. congesta*.—On the heathery portion of the Moor. Frequent.

Juncus conglomeratus, L.

J. effusus, L.

J. glaucus, Sibth.

J. acutiflorus, Ehrh.

J. supinus, Mœnch.

J. bufonius, L.

J. squarrosus, L.—Most abundant.

J. lamprocarpus, Ehrh.

Scirpus palustris, L.—Boggy portion of the Moor.

S. cæspitosus, L.—Amongst heather, &c., but not frequent.

Eriophorum vaginatum, L.—Not frequent; but in the neighbourhood it is one of the commonest plants.

Carex pulicaris, L.—Damp portion of Moor; not common.

C. stellulata, Good.

C. ovalis, Good.

C. glauca, Scop.

C. pilulifera, L.

C. lepidocarpa.

C. hirta, L.

C. paludosa, Good.

Anthoxanthum odoratum, L.

Digraphis arundinacea, Trin.—Side of Singleton Brook.

Alopecurus agrestis, L.

A. geniculatus, L.

A. pratensis, L.

Phleum pratense, L.

Agrostis vulgaris, With.

A. alba, L.

Aira flexuosa, L.

A. cæspitosa, L.

Holcus mollis, L.

H. lanatus, L.

Triodia decumbens, Beauv.—Not frequent; amongst heather, &c.

Molinia cærulea, Mœnch.—Very common and luxuriant.

Glyceria fluitans, Brown.—Edge of Bleackley's reservoir.

G. aquatica, Sm.—By Singleton Brook; very fine examples.

Poa annua, L.

P. pratensis, L.

P. trivialis, L.

Cynosurus cristatus, L.

Dactylis glomerata, L.

Festuca ovina, L.

F. rubra, L., and *duriuscula*, L.

Bromus mollis, L.

Triticum repens, L.

[About a quarter of a mile from the Moor there has occurred a *Triticum* or *Agropyrum* with very glaucous foliage and tall spikes of inflorescence, possibly *Agropyrum glaucum*, Desv. I forwarded specimens to the Botanical Exchange Club two or three years ago, but no satisfactory conclusions were arrived at on the subject.]

Lolium perenne, L.

Nardus stricta, L.--Abundant on the heathery portion of the Moor.

Nephrodium Filix-mas, Rich.

N. spinulosum, Desv.

N. dilatatum, Desv.

N. Oreopteris, Desv.—Now getting very scarce, and only undeveloped specimens observable.

Pteris aquilina, L.

Athyrium Filix-fœmina, Bernh.

Polypodium vulgare, L.

[In the immediate neighbourhood used to grow *P. Phegopteris*, L., and *P. Dryopteris*, L., but they have been long extirpated from Prestwich Clough and Mere Clough. *Ophioglossum vulgatum*, L., is reported to occur in the meadows immediately adjoining Kersal Moor, but I have not found it nearer than Mere Clough.]

Equisetum arvense, L.

E. maximum, Lam.

E. sylvaticum, L.

E. palustre, L.

E. limosum, L.

The *Equisetaceæ* are well represented in the surrounding district, eight of the nine native species being reported to occur in Mere Clough, about one mile further north from Kersal Moor. They would appear especially to abound in the Lancashire dells and cloughs, and in close proximity to the coal-measures.

Of the 240 or more species here enumerated, naturally a large proportion are widely distributed weeds. Some common plants, however, are conspicuous by their absence. I have never seen *Lamium album*, *Convolvulus arvensis*, Primrose, Cowslip, nor Mallow in the neighbourhood.

CONTRIBUTIONS TO THE FLORA OF CENTRAL MADAGASCAR.

By J. G. Baker, F.R.S.

(Continued from p. 173.)

Gaertnera obovata, n. sp.—A shrub, glabrous in all its parts, with terete woody branchlets. Stipules connate in a short ring. Leaves opposite, shortly petioled, obovate, obtuse, entire, 1–1½ in. long, moderately firm in texture, green on both surfaces, copiously penninerved. Flowers in a dense terminal panicle; pedicels very short; bracts minute, deltoid, persistent. Calyx campanulate, finally patellæform, $\frac{1}{6}$ in. diam.; teeth deltoid, finally spreading. Corolla with a cylindrical tube $\frac{1}{8}$ in. long, and five spreading lanceolate segments as long as the tube. Anthers $\frac{1}{2}$ lin. long, inserted at the pilose throat of the corolla-tube. Fruit globose, 2-lobed, black when dried, glabrous, $\frac{1}{8}$ in. diam., with a single large seed filling up each of the two cells. — Forests of West Betsileo. *Baron*, 149! A near ally of the Mauritian *G. psychotrioides*, Baker. We have two other undescribed species of this genus from Madagascar in the Kew Herbarium.

Tabernæmontana modesta, n. sp.— A shrub, glabrous in all its parts, with slender terete branchlets. Leaves opposite, distinctly petioled, oblong, entire, obtusely cuspidate, $1\frac{1}{2}$–2 in. long, moderately firm in texture, green on both surfaces, with 8–9 fine arcuate ascending main veins. Cymes few-flowered, axillary; peduncles twice as long as the petiole; bracts minute, deltoid; pedicels $\frac{1}{4}$–$\frac{1}{3}$ in. long, cernuous in the flowering stage. Calyx about $\frac{1}{2}$ lin. long; tube campanulate; segments minute, deltoid. Corolla $\frac{5}{8}$ in. long; tube cylindrical, exceeding the oblique oblong segments. Stamens inserted above the middle of the corolla-tube. — Forests of West Betsileo, *Baron*, 150! Nearly allied to *T. mauritiana*, Poir., and *T. coffeæfolia*, Bojer.

Pachypodium rosulatum, n. sp.— Stem short, stout, succulent. Leaves in a dense rosette at the tip of the branch, oblong, sessile, obtuse, $\frac{1}{3}$–$\frac{3}{4}$ in. long, subcoriaceous, thinly tomentose above, densely tomentose beneath, with the crowded parallel veins visible through the white tomentum, densely woolly at the base, and the branch beneath the rosette of leaves armed with crowded spreading brown pungent prickles $\frac{1}{4}$–$\frac{1}{3}$ in. long. Flowers 6–8 in a dense cyme at the summit of a naked shortly tomentose peduncle nearly a foot long; bracts small, lanceolate, pilose; pedicels finally $\frac{1}{3}$ in. long. Calyx $\frac{1}{2}$–$\frac{1}{3}$ in. long, densely pilose, with a short campanulate tube, and five lanceolate acuminate segments. Corolla yellowish, $1\frac{1}{2}$ in. long, pilose on the outside, especially towards the base; tube cylindrical at the base, the upper part dilated, above $\frac{1}{2}$ in. diam., campanulate, slightly oblique; segments deltoid, half as long as the tube, Anthers lanceolate, connivent, $\frac{3}{8}$ in. long, inserted at the throat of the contracted lower half of the corolla-tube. Ovary densely pilose, surrounded by the brown unequal connate glands of the disk; style slender, densely pilose, bringing the stigma on a level with the middle of the anthers. Ibara-country and Betsileo-land, *Baron*, 256! Allied to *Adenium namaquanum*, Harv. Thes. Cap. t. 117 (*Pachypodium namaquanum*, Welw.)

Mascarenhasia macrocalyx, n. sp. — A tall erect shrub, with pilose lenticellate purplish brown woody branchlets. Leaves opposite, shortly petioled, broad oblong, subobtuse, entire, 2–3 in. long, moderately firm in texture, finely downy on both sides, penninerved, with 7–8-jugate patent main veins. Flowers 3–4 at the nodes of the stem, on pilose pedicels $\frac{1}{4}$–$\frac{1}{3}$ in. long. Calyx 5-partite, about $\frac{1}{2}$ in. long, with five foliaceous downy obovate-cuneate segments. Corolla reddish, downy externally, with a tube above an inch long, cylindrical in the lower half, ampullæform in the upper half, and five lanceolate segments ½ in. long. Anthers lanceolate acuminate, ⅓ in. long, inserted at the throat of the contracted lower half of the corolla-tube. Style very slender, bringing the stigma on a level with the lower part of the anthers. Follicles 4–6 in. long.—Shrubby valleys of West Betsileo, flowering in December and January, *Baron*, 92! Near *M. lisianthiflora*, A.DC., from which it is easily distinguished by its large foliaceous sepals.

Pentopetia androsæmifolia, Dcne. — An erect shrub, 2–4 feet high.— Sides of hills in the Betsileo country, flowering in November and December, *Baron*, 21! Native name *Tandrokosy*, applied also to other Asclepiads.

SOLANUM APHANANTHUM, n. sp. — A shrub, glabrous in all its parts, with slender woody branchlets. Leaves alternate, not geminate, shortly petioled, oblong, acute, entire, 2–3 in. long, moderately firm in texture, green on both surfaces, glossy above, with distant fine immersed main veins. Flowers 6–10 in congested sessile cymes from numerous nodes opposite the leaves; pedicels very short; bracts minute, deltoid, persistent. Calyx ½ line diam., with four deltoid subpatent segments connate at the base. Corolla-tube very short; segments four, oblong, ⅛ in. long. Stamens nearly as long as the corolla-segments.— Central Madagascar, *Dr. Parker!* Falls in Dunal's section Leiodendra. Near *S. diphyllum*, L., and *S. inæquale*, Vellozo.

SOLANUM (*Dulcamara*) NITENS, n. sp.— A shrub, glabrous in all its parts, with slender woody branchlets. Leaves alternate, oblong, acute, entire, distinctly petioled, 1½–2 in. long, moderately firm in texture, bright green on both surfaces, lucent above, with fine distant main veins. Cymes in an ample deltoid terminal panicle; pedicels ⅓–½ in. long, thickened upwards; bracts very minute. Calyx 1-12th in. broad and long, with a campanulate tube and five deltoid teeth as long as the tube. Corolla with a short tube, and five lanceolate segments ⅓ in. long, pilose at the edge. Stamens reaching half-way up the corolla-segments. Fruit a small glabrous berry.— Forests of West Betsileo, *Baron*, 145! Falls in Dunal's section Subdulcamara. Near *S. flaccidum*, Vellozo.

SOPUBIA TRIPHYLLA, n. sp.— Stems simple, erect, rather woody, glabrous, about a foot long. Leaves in whorls of three, shorter than the internodes, sessile, entire, lanceolate, ascending, ½–¾ in. long, 1-nerved, with revolute edges, glabrous. Flowers in a lax raceme 6–8 in. long, mostly three from a node; pedicels above ½ in. long, with bracts at the base like the leaves, and two small linear bracteoles near the flower, Calyx ¼ in. long, the deltoid segments equalling the campanulate tube. Corolla-tube as long as the calyx; segments spreading, orbicular, ½ in. long. Stamens half as long as the corolla; anthers linear-oblong, densely pilose. Style reaching to the tip of the corolla-segments.—West Betsileo, with the preceding, *Baron*, 141! A well-marked new species.

Sopubia trifida var. *madagascariensis*, Benth. — Common in the Betsileo country, *Baron*, 142!

Halleria ligustrina, Baker.—Forests of East Betsileo, flowering in October and November, *Baron*, 210! Native name *Tsatsoy*.

VANDELLIA (*Hornemannia*) CORYMBOSA, n. sp.—An erect annual, with finely pilose erect much-branched stems 3–4 in. long. Leaves opposite, distant, sessile, ovate, dentate, about $\frac{1}{2}$ in. long, green on both surfaces, slightly pilose. Flowers 4–8, in lax sessile terminal corymbs, on ascending pedicels $\frac{1}{4}$–$\frac{3}{4}$ in. long. Calyx infundibuliform, $\frac{1}{8}$ in. long, finely pilose; teeth lanceolate-deltoid, $\frac{1}{3}$–$\frac{1}{4}$ as long as the tube. Corolla lilac, more than twice as long as the calyx; tube rather longer than the calyx; lobes orbicular. Stamens 2, inserted low down in the corolla-tube and reaching to its throat, and two at the base of the upper lip, with curved filiform filaments and rudimentary anthers. Style reaching to the throat of the corolla-tube. Capsule not seen.—Central Madagascar, *Baron*, 236! Very near *V. nummulariæfolia*, D. Don, of the Himalayas.

LIMNOPHILA TORENIOIDES, n. sp.—A tufted annual, glabrous in all its parts, with angled simple ascending or trailing stems under a foot long. Leaves opposite, ovate or oblong, amplexicaul, serrated, $\frac{1}{2}$–$\frac{3}{4}$ in. long, acute or subobtuse, thin in texture, triplinerved, green on both surfaces. Flowers in a simple raceme extending down below the middle of the stem, on ascending pedicels as long as or longer than the leaves. Calyx campanulate, $\frac{1}{4}$ in. long; teeth five, small, equal, deltoid-cuspidate. Corolla thrice as long as the calyx; segments short, orbicular. Anthers four, contiguous in the corolla-tube some distance below the throat, the longer filaments 5–6 times as long as the anther. Style reaching to the throat of the corolla-tube, flattened gradually towards the tip. Capsule oblong, as long as the calyx.—Central Madagascar, *Baron*, 234! *Parker!* Allied to *L. hirsuta* and *L. punctata*.

ILYSANTHES OBLONGIFOLIA, n. sp.—A densely tufted herb, glabrous in all parts, with slender trailing simple stems, $\frac{1}{2}$–1 ft. long. Leaves opposite, oblong, sessile, entire, punctate, about $\frac{1}{4}$ in. long, moderately firm in texture. Flowers in a long lax raceme, on pedicels $\frac{1}{2}$-$\frac{3}{4}$ in. long, ascending singly from the axils of the leaves of the upper half of the stem. Calyx $\frac{1}{8}$ in. long, with five linear segments connate only at the very base. Corolla $\frac{1}{3}$ in. long, with a tube longer than the calyx and small suborbicular segments. Fertile anthers placed opposite the throat of the corolla-tube, upper stamens not antheriferous. Style twice as long as the calyx, with a capitate stigma. Capsule not seen. Central Madagascar, *Dr. Parker!* Halfway between *I. capensis* and *I. rotundifolia*, the latter a Madagascar plant.

Kigelia Madagascariensis, Baker.—A dwarf tree, flowering in July, when bare of leaves.—Bara country, between Ambihimandroso and Ihosy, *Baron* 8!

VITEX UNIFLORA, n. sp.—A tall shrub or small tree, only the young leaves and branchlets obscurely pilose. Leaves petioled, simple, obovate-cuneate, obtuse, entire, 2–3 in. long, subcoriaceous, green and glabrous on both surfaces, penninerved, with few distant anastomosing primary nerves. Flowers solitary, in the axils of the leaves, on ascending pedicels about an inch long, with a pair of large persistent linear bracteoles at the middle. Calyx campanulate, blackish, obscurely pilose, $\frac{1}{6}$ in. long; teeth deltoid. Corolla dark red, thinly pilose externally, $\frac{3}{4}$ in. long; tube curved, infundibuliform, $\frac{1}{6}$ in. diam. at the throat; segments subequal, orbicular, $\frac{1}{8}$-$\frac{1}{6}$ in. long. Stamens a little exserted. Ovary 2-celled, with two ovules in a cell. Fruit not seen.—Forests of West Betsileo, flowering in December and January, *Baron* 124.

(To be continued).

ON SOME RARE IRISH PLANTS.

By Thomas H. Corry, M.A., F.Z.S.

An examination of plants gathered during the past few years in various parts of Ireland having yielded new or additional stations in the provinces, as laid down in the 'Cybele Hibernica,' for certain rare and interesting plants, I now offer the results to the readers of this Journal. In all cases where the plant is an addition to the flora of the province in which it occurs, this is signified by the initial D. before the numeral indicating the province. Many of the specimens have been submitted for examination to Prof. C. C. Babington, who has kindly signified the results of his determination of them: in such cases this fact is expressed by a mark of admiration followed by the initials C. C. B., placed after the station.

Thalictrum majus, β. *Kochii*, Fr.—D. 6. Limestone rocks on the hillside south of Blackhead, Co. Clare! (C. C. B.). This is the station given by Mr. F. J. Foot in the 'Cybele' for *T. flexuosum*, Bernh. An addition to the Irish flora.

Ranunculus heterophyllus, Fries.—D. 6. Drains by the Fergus at Clare Abbey, Co. Clare! (C. C. B.). D. 12. By the shores of Lough Neagh at Crumlin, Co. Antrim! (C. C. B.); in the Moneycara River, Newcastle, Co. Down! (C.C.B.); and Ballylough Lake, Castlewellan, Co. Down! (C. C. B.).

R. penicillatus, Hiern.—10. In the canal at Maghery, and in Lough Neagh, near the mouth of the canal, Co. Armagh! (C. C. B.). D. 12. In the Bann near Coleraine, Co. Derry, *G. C. Hyndman*.

Alliaria officinalis, Andrzj.—10. Near Clones, Co. Monaghan.

Crambe maritima, L.—11. Tory Island, Co. Donegal, *G. C. Hyndman*. An authentic specimen of this plant, gathered by Mr. Hyndman in the station above mentioned, exists in the Herbarium of the Belfast Natural History and Philosophical Society, so that the true plant was really in former times a native of the island, and no error occurred in its being recorded therefrom in Dickie's 'Flora of Ulster,' although neither Mr. H. C. Hart (Journ. Bot., n. s., viii., p. 81) nor Mr. R. M. Barrington (*id.* 266.) were able to meet with it on Tory.

Viola lutea, Huds.—5. Heath near Ballinascorney, Co. Dublin! (C. C. B.).

Malva moschata, L.—D. 11. Fields north-east of Lough Eske, Co. Donegal.

Vicia tetrasperma, Mœnch.—D. 12. Corn-field near Shaw's Bridge, Lagan Canal, Co. Down.

V. sylvatica, L.—D. 10. Near Ballinamallard, Co. Fermanagh. 11. In a glen north-east of Lough Eske, Co. Donegal.

V. lathyroides, L.—5. Sandhills, Portmarnock, Co. Dublin.

Agrimonia odorata, Mill.—12. By the river, Glenarm Park, Co. Antrim! (C. C. B.).

Rubus carpinifolius, W. & N.—D. 12. Hedge, second lock, Logan Canal, Belfast, Co. Antrim! (C. C. B.).

Saxifraga aizoides, L.—12. On wet places among rocks and by streamlets on the north side of Tor Head, Co. Antrim, in considerable quantity.

Parnassia palustris. L.—11. Abundant near Ballyshannon, Co. Donegal, especially on the side next Donegal town, where the meadows are white with it. A specimen from this locality occurs in Mr. G. C. Hyndman's herbarium (see 'Flora of Ulster.').

Inula Helenium, L.—11. In a glen north-east of Lough Eske, Co. Donegal.

Hieracium anglicum, Fr.—12. Cliffs Sleeve, Bignian Maurne Mountains, Co. Down! (C. C. B.).

Solanum Dulcamara, L.—11. Near the town of Donegal.

Orobanche minor, Sutt.—D. 12. Clover-field near Ballylesson, Co. Down.

Melampyrum pratense, γ. *montanum*, Johnst.—11. Lemacraig Mountain, near Lough Derg, Co. Donegal.

M. sylvaticum, L.—11. In a glen north-east of Lough Eske, Co. Donegal; and in a wood on the west side of the lake.

Mimulus luteus, L.—D. 11. In a stream near Lough Derg, Co. Donegal. Abundantly at Carrick, Co. Donegal.

Lamium intermedium, Fr.—12. Cushendim, Co. Antrim.

L. album, L.—10. Abundant near Clones, Co. Monaghan.

Anagallis arvensis, L.—11. Tory Island, Co. Donegal, *G. C. Hyndman*, Aug. 1845. Omitted in Mr. Barrington's list (Journ. Bot. n. s. viii., pp. 263–270.).

Salix pentandra, L.—11. Abundant round Pettigo and Lough Derg, Co. Donegal.

Carex pallescens, L.—11. Meadows by Eske river, Co. Donegal.

C. punctata, Gaud.—D. 12. On Ballgowan Bog, Co. Down! (C. C. B.). A very interesting addition to the flora of North-east Ireland.

Polypodium vulgare, L., var. *semilacerum* (*hibernicum*).—11. Island in Lough Erne, Co. Donegal.

P. Phegopteris, L.—11. In a glen north-east of Lough Eske, near the station of 'Flor. Hib.'

Lastræa Oreopteris, Presl.—11. In a glen west of Lough Eske, and near Black Gap, Co. Donegal, but far from common in South Donegal.

Polystichum aculeatum, Roth, var. *lonchititoides*.— 11. Waterfall Glen at Lough Eske, to the north-east of the lake. I have no doubt that this is Professor E. Murphy's station for *P. Lonchitis*, which, though it was diligently searched for, could not be found. The same idea is put forward by Mr. Hart (Journ. Bot., n.s., x., p. 240.)

Notices of Books.

Articles in Journals.—June.

American Journal of Science.—W. P. Wilson, 'Respiration of Plants.'

Botanische Zeitung.—R. Goebel, 'On the Morphology and Physiology of the Leaf.'

Botanisches Centralblatte.—Celakovsky, 'On Phyllody of the Ovules of *Aquilegia*;' with 1 plate.

Botanisk Tidjskrift.—J. Lange, 'New and Rare Plants in the W. University Collection,' 3 plates (*Iris lamprophylla*, *I. atroviolacea*, *Cotoneaster disticha*, *Cratægus hiemalis*, *C. pinnatiloba*, *C. sorbifolia*, *C. rubrinervis*, *Spiræa brachybotrys*, *S. brumalis*, *S. glabrata*, *Acer neglectum*.)—N. Wille, 'Growth of Stems and Leaves in *Avicennia nitida*, L.'

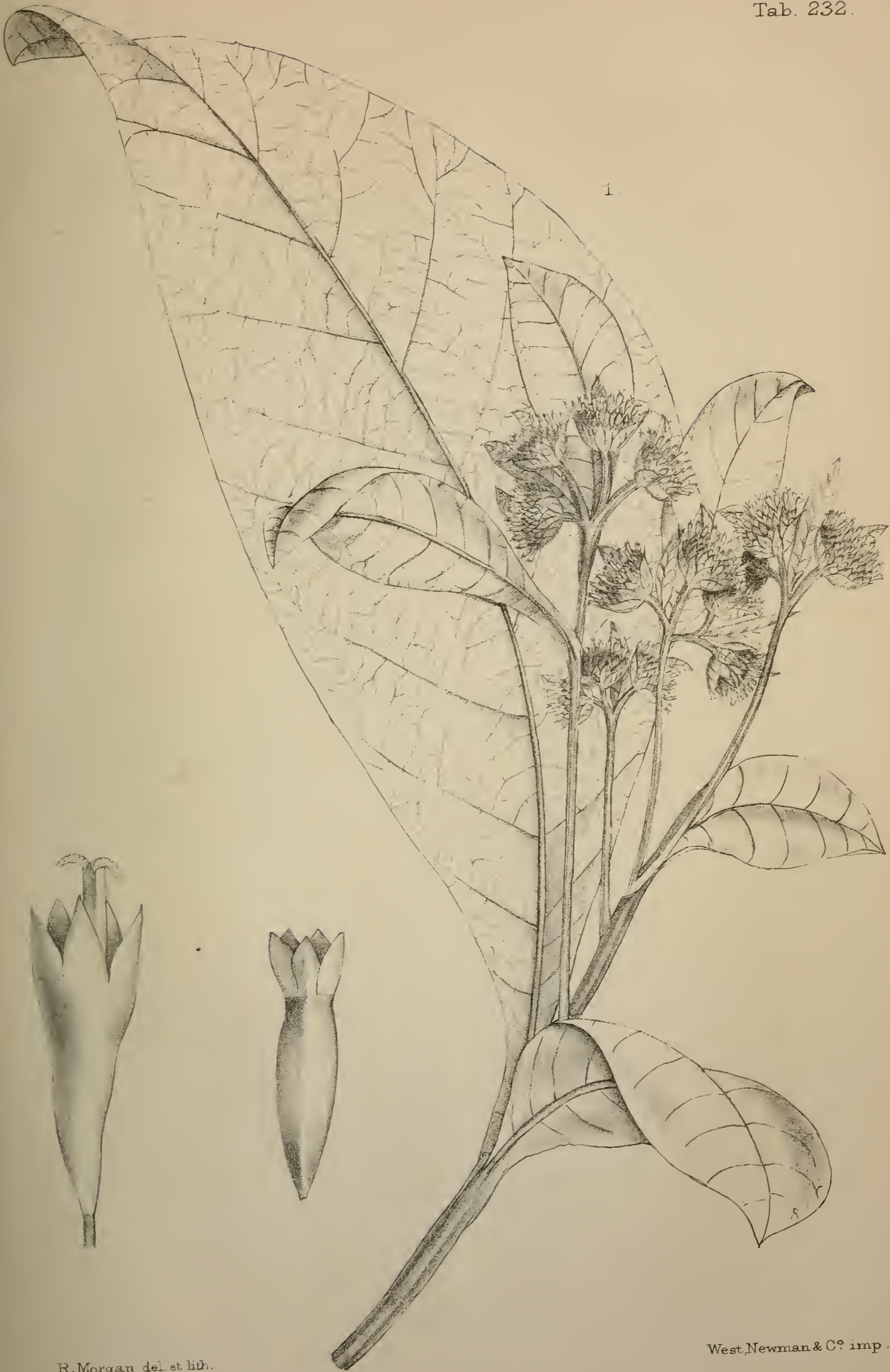
Hedwigia. — Rehm, '*Ascomycetes*,' Fasc. xiii. — F. Stephani, '*Riccia ciliifera* and *R. Breidleri*.'

Midland Naturalist.—W. B. Grove, 'The Myxomycetes' (contd.), 1 plate.—J. E. Bagnall, 'Flora of Warwickshire' (contd.)

Œsterr. Bot. Zeitschrift.—L. Fr. Hohenbuhel, 'Josephine von Kwiatkowski.'—F. Hofmann, 'Flora of Bosnia.'—C. Fehlner, 'A Double Sporogonium in *Meesa uliginosa*, Hedw.'—R. Schulzer, 'Mycological Notes.'—Sintenis, 'Cyprus and its Flora' (contd.) *Salvia Sonklari*, Pant., n. sp.

Torrey Bot. Club Report.—C. H. Peck, 'New Fungi' (*Physarella* (n. gen.) *mirabilis*; *Caliciopsis* (n. gen.) *pinea*).—E. L. Greene, 'New Western Plants' (*Bigelovia Parishii*, *Madia citriodora*, *Hemizonia hispida*, *Hymenopappus robustus*, *Hieracium Rusbyi*, *H. brevipilum*, *Senecio Rusbyi*, *Cupressus Arizonica*.)—W. G. Farlow, 'Notes on New England Algæ,' n. sp. (*Phæosaccion Collinsii*, *Scaphospora* (?) *Kingii*, *Glæocapsa zostericola*.—G. E. Davenport, 'Fern Notes' (iv.) —T. S. Collins, 'Notes on New England Algæ.'—G. E. Davenport, '*Ophioglossum nudicaule*.'

Tab. 232.



R. Morgan del. et lith.

West, Newman & C^o. imp.

Gorceixia decurrens, *Baker.*

Original Articles.

ON *GORCEIXIA*, A NEW GENUS OF *VERNONIACEÆ*.

By J. G. Baker, F.R.S.

(Tab. 232.)

This is a new genus of Vernonioid Compositæ, discovered by Dr. Glaziou last year in the course of his indefatigable exploration of the southern provinces of Brazil. It is named after M. Henri Gorceix, the founder of the Brazilian School of Mines. Dr. Glaziou wished that a very curious new fern, sent in the same parcel, should bear the name of his fellow-worker, but as that falls under *Acrostichum* in the comprehensive sense in which we have defined the genus in 'Synopsis Filicum,' I have taken the liberty to transfer the name to this present plant.

Gorceixia, genus novum Vernoniacearum.—Capitula homogama 5-flora, floribus omnibus tubulosis hermaphroditis. Involucrum cylindricum, bracteis 5–6 lanceolatis rigidis acutis subæquilongis. Receptaculum parvum nudum. Corollæ æquales regulares, tubo cylindrico, limbo infundibulari, dentibus 5 erectis lanceolatis. Antheræ basi sagittatæ, auriculis brevibus. Styli rami subulati ad basin æqualiter hirtelli. Achænia tetragona glabra ad basin attenuata. Pappus paleaceus, squamis paucis uniseriatis rigidis apice irregulariter serratis.

Gorceixia decurrens, sp. unica.—A shrub, with the grey-puberulent angled woody branches winged by the decurrent bases of the alternate leaves. Leaves oblong-spathulate, moderately firm in texture, green and glabrous on the upper surface, thinly canescent beneath, denticulate, attaining a length of 6–9 in. and a breadth of 2–3 in., narrowed gradually from near the middle to the decurrent base. Inflorescence a corymb of many peduncled heads, each consisting of a large number of sessile capitula, and bracteated on the outside by several small canescent leaves which are not larger than the involucre. Involucre $\frac{1}{8}$ in. long. Flowers reddish. Achene about a line long. Pappus not more than a quarter as long as the achene.—Rio de Janeiro, *Glaziou* 12803! The habit of the plant is completely that of *Vanillosmopsis*, but the uniserial involucre and the paleaceous pappus are very different, and not similar to those of any previously known genus, but perhaps nearest to *Oliganthes*.

The same parcel also contains the following novelties:—

Wunderlichia Glaziovii, n. sp.—A shrub or small tree, with stout branchlets, tomentose at the top, but soon becoming naked, purplish brown, ¼–½ in. diam., closely leafy up to the summit. Leaves alternate, shortly petioled, orbicular or obovate, entire, 6–8 in. long when fully developed, rounded or deltoid at the base, moderately firm in texture, green and obscurely pubescent on the upper surface, matted with persistent whitish tomentum beneath. Capitula 3–6 in a dense cernuous terminal corymb, on short tomentose peduncles. Involucre campanulate, 15–18 lines long and broad; bracts multiserial, rigid in texture, all obtuse, the innermost linear-oblong, almost colourless and glabrous, above an inch long, the outer ones gradually short, all adpressed, tinged with bright red, the small ones towards the base more or less tomentose on the back. Flowers all uniform. Corolla an inch long, with a cylindrical tube and a narrow limb, slit down nearly to the base into 5 linear segments. Anthers pale yellow, much exserted, ½ in. long, not appendiculate at the base. Achene glabrous when mature, subtetragonal, ½ in. long. Pappus of very numerous stramineous very narrowly linear paleæ, an inch long, connate at the very base, and all deciduous together.—*Glaziou* 12842, and sent before as 12060. This is one of the most striking of known *Compositæ*, and a very interesting discovery. The genus belongs to *Mutisiaceæ* in the neighbourhood of *Hesperomannia* and *Gochnatia*, and was first described by Mr. Bentham in 'Genera Plantarum,' from a species found by Riedel in Minas Geraes. This is a small tree, ten or twelve feet high, with still shorter branches, clothed with dense wool, sessile leaves tomentose on both sides, a densely pilose achene and flowers in which the corolla-tube is three or four times as long as the limb. Dr. Glaziou's fine specimens supply all that is necessary to complete the generic description.

EUPATORIUM CINEREUM, n. sp. — A shrub, with slender terete opposite branchlets, spreading at right angles, clothed with fine short pubescence. Leaves opposite, petioled, ovate, acute, entire, 1–2 in. long, green and thinly pilose above, densely clothed with short drab pubescence below. Capitula in copious panicles, with densely corymbose branches; peduncles short, at most ¼ in. long. Involucre campanulate, ¼ in. long and broad; bracts about 20, triseriate, subcaducous; inner lanceolate, acute, green, glabrous; outer ovate, pilose. Flowers about twelve in a head. Corolla purple, under ¼ in. long. Achene glabrous, ⅛ in. long, with 4–5 strong ribs. Pappus white, rather longer than the achene, of about 30 strongly ciliated bristles.—*Glaziou* 12816! Belongs to § *Heterolepis*, near *E. tricephalotes* and *Arnottii*, Fl. Bras., vol. vi., pt. 2, pp. 322–3.

VIGUIERA WEDELIOIDES, n. sp.—A shrub, with terete moderately stout dense pilose brown woody branches, closely leafy up to the very top. Leaves opposite, shortly petioled, ovate, obtuse, crenate, rounded or slightly cordate at the base, subcoriaceous, green and scabious on both surfaces, the veinlets beneath raised. Heads 2–4 in a dense terminal corymb, many-flowered, ligulate. Involucre campanulate, ⅜–½ in. long and broad; bracts 3–4-serial, rigid, obtuse, adpressed, the outer gradually shorter; inner linear-oblong, glabrous; outer ovate or roundish, pilose on the back. Ligules few, yellow, spreading, with an oblong yellow lamina $\frac{1}{4}$ in. long. Scales of the receptacle lanceolate, navicular, under $\frac{1}{2}$ in. long. Disc corollas $\frac{1}{6}$ in. long, with a tube not more than half as long as the cylindrical limb, which has five lanceolate teeth. Achene subterete, glabrous when mature, $\frac{1}{6}$ in. long. Pappus of about 8 unequal lanceolate rigid stramineous paleæ 1-12th in. long, free down to the base.—*Glaziou* 12845. Easily recognised in the genus by its shrubby Wedelioid habit, and leaves all opposite up to the top of the branches.

ON *RADULA GERMANA*, JACK.

By W. H. PEARSON.

"Dioica. Caule prostrato, implexo cæspitoso, subpinnatim ramoso; foliis imbricatis adscendentibus planiusculis integerrimis, lobo superiori breviter obovato-rotundato apice dilatato, lobo inferiori triplo minori adpresso, quadrato, angulo acuto, involucralibus obovatis; perianthiis applanatis, obconicis, truncatis. Flores masculi in stirpe propria plerumque laterales; folia perigonialia arcte imbricata numerosa, spicas longiusculas formantia, in medio canalem secundum caulem efficientia."—*Jack*.

Diameter of stem ·17 mm. × ·11 mm., ·16 × ·12, ·15 × ·11; involucral superior lobe 1·1 mm. long × ·6 mm. broad, lobule ·8 mm. long × ·4 mm. broad, 1· × ·5, lobule ·9 × ·4; ordinary leaves, superior lobe 1·2 mm. long × ·8 broad, 1·2 × ·7, 1·1 × ·8, 1· × ·7, 1· × ·6, lobule ·7 mm. long × ·3 mm. broad, ·6 × ·4, ·6 × ·35, ·55 × ·35, ·4 × ·3; perigonial leaves, superior lobe ·8 mm. long × ·4 mm. broad, ·7 × ·45, ·625 × ·45, ·6 × ·45, ·6 × ·4; lobule ·6 mm. long × ·4 mm. broad, ·45 × ·3; cells $\frac{1}{50}$ mm.; antheridia ·2 mm. × ·15 mm.; archegonia ·12 mm. × ·04 mm; colesule 2·2 mm. long × 1·1 mm. broad, 2·1 × ·9; gemmæ ·1 mm. diameter usually. "Valves of the capsule ·9 mm. long; elaters ·28 mm. long × ·06 mm. thick; spores ·044 mm. dia."—*Jack*.

Syn. *Radula complanata*, Dmrt., var. γ. *plumulosa* and *Radula complanata*, Dmrt., var. δ. *tenuis*, Nees, Nat. Eur. Leb. iii. p. 148 (1838), G. L. N. Syn. Hep. p. 257 (1844).

Radula angustata, Pearson MSS.

Radula germana, Jack, 'Flora,' n. 23 and 25 (1881), pp. 355, 395–7.

Delin. Jack, 'Flora' (1881), viii., fig. 6, n. 1 ♀ fertile, n. 2 ♂.

Exsicc. Husn. Hep. Gall., fasc. 4, n. 86, as *Radula complanata*, var. *propagulifera*.

Hab. In Scotland, in alpine and subalpine situations, on rocks, and amongst mosses. Rocks by the Burn, Forfar, April, 1860, *A. Croall*. Loch-na-Gat, Ben Lawers, *Geo. Davies*. Mael Tarmachan, near Ben Lawers, August, 1878, *C. J. Wild;* July, 1880, *G. A. Holt*. Ben Cruachan, Loch Awe. Ben Laoigh.

Craig Calleach (♂), July, 1881, *T. Rogers*. This species appears to be with us, so far as I know, restricted to the Scotch Alps. I have seen nothing of it on several of the Welsh Mountains, and whilst botanising with Mr. Geo. Stabler on Bow Fell, June, 1881, saw no trace of it there. Herr Jack records it from Germany, Switzerland, and Austria.

Resembling large forms of *Lejeunia serpyllifolia*, growing in patches procumbently with shoots imbricating, or growing erect when intertwined with mosses (*Dicranum falcatum*, &c.); also of a bright pea or pale yellowish green, young terminal branches darker green; the lower parts and older stems of a pale sordid brown colour, stems ¾ of an inch to an inch long, frontally compressed, showing upon a transverse section 6 cells by 9; those of the female plant subpinnate, subbipinnate, furcate, or dichotomous; barren male stems often almost simple, with a few very short branches, which are longer near the apex; the barren and fertile male stems are narrow, graceful, and flexuose; the fertile male irregularly pinnate, having several lateral amentula consisting of from 8 to 15 pairs of perigonial leaves, the chief stem often terminating in a spike of perigonial leaves; ramuli frequent, very short, arising from the side of the stem alternately, bearing usually 3 to 4 pairs of leaves, length about 1 mm., breadth with leaves, ·2, ·3, ·4 mm. Rootlets few, arising from the under side of the lobule, which is there drawn out to a pimple in bunches of short sordid white threads. Leaves alternate, ascending, the upper ones imbricating one another, those of the lower portion of the stem approximate; on slender stems the leaves are more distant, not imbricating, roundish ovate or obovate, convex seen from above, and hiding the stem; entire, the terminal leaves (superior lobes) often irregularly erose from the formation of gemmæ; lobule usually about one-third less the size of the superior lobe, occasionally half, rhomboid, subquadrate or quadrate, ovate at the free corner, acute or obtusate, base tumid, with the upper portion plane and appressed to under side of superior lobe, some lobules slightly repand; the basal pouch often contains foreign bodies (*Rotifera*, &c.)' which may easily be mistaken for old or imperfect antheridia. Involucral leaves accrescent, oblong, with narrower lobes and lobules; also the barren involucral leaves have obtuse inflexed lobes, which give the abortive involucre a turbinate shape; they enclose from 7 to 10 sterile archegonia; perigonial leaves closely imbricating each other, smaller, ovate, ventricose, with lobule ovate, almost equal in size to superior lobe, forming a deep pouch; cells small, hexagonal, usually thickly filled with chlorophyll granules; trigones very minute; colesule compressed, obconical, with a gradually tapering base; mouth entire.

"Calyptra with a long neck, slender, pyriform; pedicel projecting 1·2 mm. above the colesule; capsule oblong-oval, divided to the base into 4 oval valves; elaters curved, bispinal, loosely winding; spores almost round, finely granulate."—*Jack*.

Antheridia oval, enclosed in the deep pouch-like perigonial leaves singly. The plant gives out in water a pale yellow colouring-matter like several of the other *Radulæ*.

Amongst a collection of *Hepaticæ* sent me by Mr. G. A. Holt, of Manchester, made on the Breadalbane Mountains, July, 1880, was a *Radula* which appeared to be quite distinct from any of the European species known to me, so I named it provisionally *Radula angustata* on account of its narrow graceful stems, and as such sent it to Dr. Gottsche, who wrote me—"I have seen your *Radula angustata*, and have made a drawing of it in two sheets in quarto. I have only found 7 barren archegonia in the involucral leaves with propagula. I have been puzzled very much this year (1881) with drawing nearly 100 plates of *Radula*, which amount nearly to 70 species. We have a form in Germany which has not the monoicous character of *Radula complanata*, the male plant of which is not known; the calyx is somewhat different from it also, and so is the mode of branching, otherwise it is only found propaguliferous."

To my friends Gustav Limpricht and J. A. Jack I forwarded specimens, both of whom assured me that my *Radula angustata* was a species known as *Radula commutata*, Gottsche, but as yet unpublished; so under that name I brought it before the Manchester Cryptogamic Society, and it was included in the list of species in the London Catalogue.

Recently Jack has published a monograph on the European *Radulæ*, and after the comparison of original specimens and from Herr Jack's description I have little hesitation in referring all the Scotch alpine specimens to his *Radula germana*, a species which Jack himself says "stands very near to *Radula commutata* in many relations, and from which it is often difficult to distinguish it." In a recent letter J. A. Jack says, "*Radula commutata*, which is peculiar to the plains, is perhaps only a variety of *Radula germana*, which grows upon the mountains and the alps; but until one has found the male plant of *Radula commutata* in the plains itself, one is not able to judge with any certainty." I should myself rather say that *Radula germana* is the alpine variety of *Radula commutata*.

Since my attention was directed closely to this species I find I have in my herbarium specimens collected from the Breadalbane station two years previously by Mr. C. J. Wild, who forwarded me specimens to name, which I neglected to examine. I have also specmens collected some years ago by Mr. George Davies, Loch-na-Gat, Ben Lawers. Dr. Carrington has in his herbarium the same species, collected in 1860 in Forfar by Mr. A. Croall. It may probably be found in other herbaria, being overlooked as a form of *Radula complanata*, Dmrt., from which it differs in its inflorescence, &c.

Radula alpestris, Berggren, which, being like *Radula germana* an alpine species, might be confounded with it, is only a form of *Radula complanata*, being parvicous (Lindb. Acta societatis scientarum fennicæ, x., p. 491).

Radula aquilegia, Tayl., differs in the dark olive-brown colour, form of lobule, and colesule.

Radula Lindbergiana, Gottsche, comes near to it, but differs in being of a laxer texture; colour sordid green or brown; insertion of leaves, which stand off from the stem, not so closely imbricating; colesule shorter and broader.

ANOTHER NEW CHINESE *RHODODENDRON*.

By H. F. Hance, Ph.D., F.L.S.

I had the pleasure of describing, in the pages of this Journal last year,* a very fine new species of *Rhododendron*, discovered in Kwang-tung province by the Rev. B. C. Henry, of the American Presbyterian Board of Missions. Mr. Henry lately again visited the locality, and was successful in procuring several vigorous living specimens of this desirable shrub, which I have little doubt will soon be in cultivation in Europe. He was still more fortunate in detecting another extremely beautiful species, also undescribed, of which he brought back living branches in full flower, enabling me to draw up the following diagnosis from the most satisfactory materials. I have dedicated it to Mr. Henry's amiable and accomplished wife, the frequent companion of his missionary journeys into the interior, who on these occasions has the charge and preparation, *ex officio*, of the botanical collections, a task for which the excellently dried specimens prove her to have been specially designed by natural selection.

Rhododendron (*Tsusia*) Mariæ, n. sp. — Ramulis ferrugineo-setosis, foliis coriaceis elliptico-lanceolatis basi obtusiusculis apice acutis calloso-mucronatis supra saturate viridibus rete venularum impresso præter costam glaberrimis subtus pallidioribus parce strigillosis ad 2½ poll. longis pollicem latis petiolo strigoso 4–5 lin. longo, gemmarum terminalium foliis parvis fultarum squamis oblongis acutis ciliatis dorso aureo-sericeis, floribus 12–15-umbellatis lilacinis leviter odoris, pedicellis rubris glanduloso-pilosis, calyce obsoleto ad cilia nempe reducto, corollæ glaberrimæ tubo cylindraceo leviter 5-sulcato 4½ lin. longo laciniis ei æquilongis ligulatis apice rotundatis cum mucronulo æqualibus patentibus, staminum 5 apices loborum adtingentium filamentis albis glaberrimis antheris linearibus brunneis lineam longis apice poro duplici rotundo dehiscentibus basi obtuse deorsum productis, ovario dense glanduloso-setoso, stylo stamina dimidio superante glaberrimo stigmate capitato,

In silvis circa cœnobium Fi-loi-tsz, ad angustias Tsing-ün fl. North River, prov. Cantonensis, d. 2 Apr., 1882, detexit rev. B. C. Henry. (Herb. propr. n. 22025).

This unquestionably belongs to the group *Tsusia*, but is remarkably distinct from all its allies, by the shape of the corolla and the many-flowered umbels. Though the flowers are comparatively small, their number and compactness, lovely colour, delicate fragrance, and the contrast with the golden silky bud-scales, make this one of the prettiest and most interesting species I have seen. The plant would be a great acquisition to European gardens.

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* Journ. Bot. xviii. 243.

I avail myself of the opportunity to give a description of the fruit of *R. Henryi*, which was unknown when my original diagnosis was drawn up :—

Capsulis fusiformibus eximie crebreque exasperatis 1¾ poll. longis fenestratim 6-valvibus valvis scilicet medio tantum dehiscentibus utrinque dui connexis demum basi solutis stylo rigido iis æquilongo coronatis.

NOTES ON SOME PLANTS OF NORTH-EAST CORNWALL.

By T. R. Archer Briggs, F.L.S.

In vol. xviii. of the 'Journal of Botany' (1880) will be found (pp. 295–99) "certain unrecorded stations for some plants near Bodmin, East Cornwall," noted by me whilst spending a few days at Lavethan, in the parish of Blisland. A second visit to the same beautiful residence has enabled me to get together the following notes respecting the botanical productions of a portion of the country lying between the town of Bodmin and the north coast of Cornwall, at Port Isaac Bay. This tract forms part of the basin of the Camel or Allan River, which stream flows into the Bristol Channel by the town of Padstow. It lies on slates of the Devonian or Old Red Sandstone Group, dotted with trappean masses and intersected by elvan veins in certain spots. It forms a portion of Vice-County 2 (E. Cornwall) of Watson's 'Topographical Botany,' but were a further division of the county into north and south to be made would come under that of N.E. Cornwall. Its proximity to the Bristol Channel, and the fact that a large body of salt water flows for several miles up the wide estuary of the Camel River, would lead us to expect a flora with maritime charateristics, and this I find to be one of its features. The list that follows can only be regarded as a contribution towards a record of some of the more remarkable of its species.

Clematis Vitalba, L.—Egloshayle; in great profusion in a low-lying hedge by a lane near the village, and occurring elsewhere in the neighbourhood. I think it indigenous. In Devon and Cornwall, in other than a limestone soil, this is often very local, being generally confined to warm sheltered spots, and showing a partiality for places near tidal waters.

Anemone nemorosa, L.—Camel Valley, between Tresarret and Helland Bridges.

Ranunculus hirsutus, Curt.—On the marshy "flat" at Amble, and elsewhere in that neighbourhood; roadside at Hendra, between the villages of St. Mabyn and St. Kew; damp spot by the roadside between Cakeval, St. Kew, and St. Endellion Church. Certainly a native species in W. Cornwall, E. Cornwall, and S. Devon. It is generally at no great distance from the sea or tidal waters that it is met with, though it is not so decidedly a salt-marsh plant as *R. sceleratus*, L., with which it is associated at Amble.

R. parviflorus, L.—Near Denhams Bridge, toward St. Kew; St. Endellion.

Aquilegia vulgaris, L.—Washaway.

Papaver Argemone, L.—On earth-capped wall near St. Endellion Church.

Corydalis claviculata, DC.—St. Kew; growing plentifully near the village. There seem to be but few localities on record for this plant in the county.

Fumaria confusa, Jord.—About St. Kew; between St. Endellion and Port Isaac; between Washaway and Egloshayle. The only Fumaria of the *Capreolatæ* common in Devon and Cornwall, where it seems to be generally distributed. I have failed to comprehend "*F. muralis*, Sonder.," either from book-descriptions or specimens so labelled.

Sinapis nigra, L.—Between St. Kew and Amble; Port Isaac.

Barbarea præcox, Brown.—On a hedge-bank near St. Kew Church.

Nasturtium officinale, Brown.—Growing with remarkable luxuriance in the tract, and so exhibiting the characters assigned to the so-called var. *siifolium*, having thick stems, erect for a foot or more, with the leaflets nearly uniform in size, and Sium-like in shape.

Cochlearia officinalis, L.—Helland; in plenty for a considerable distance on an elevated and exposed hedge-bank immediately from the turning to the church along the road to Blisland. This station is between three and four miles from tidal water, though open to breezes blowing up from the Camel estuary at that distance. In abundance on hedge-banks between the coast at Port Isaac Bay and St. Endellion Church, extending inland to quite the distance of a mile. The occurrence of this plant in an intermediate sort of station to those respectively assigned to its type form, *littoralis*, and its variety, *alpina*, viz., "muddy shores" and "wet places on mountains," is very interesting. In one locality near Plymouth (see 'Flora of Plymouth,' p. 28) it is to be seen growing under very similar conditions; and here its appearance seemed to me so remarkable, that until I found it at these new Cornwall semi-inland stations I had a vague suspicion it might have been carried to the Plymouth one from the coast with sea-weed brought for manure.

C. anglica, L.—In the marshy ground at Amble; Egloshayle.

Draba verna, L.—Wall-top near Amble. I suspect this will be found to be a somewhat local species in Devon and Cornwall.

Lepidium Smithii, Hook.—St. Endellion, &c. Probably common throughout the two counties.

Reseda Luteola, L.—St. Kew Village.

Viola hirta, L.—Between Amble and the Wadebridge and Camelford Road; and near Hendra, St. Kew.

Stellaria media, With., d. *umbrosa*.—Hedge-bank near Helland Church; with, however, a few scattered hairs on the flower-stalks.

Sagina apetala, L.—Egloshayle. Probably it might have been noted for many other places.

S. ciliata, Fries.—Dry spot near a quarry at St. Kew.

S. subulata, Wimm. Waste spot by the Bodmin and Camelford Road at Pencarrow.

Spergularia rubra, Fenzl.—St. Kew. A somewhat local plant in Devon and Cornwall.

S. neglecta, Syme.—Egloshayle.

S. rupestris, Lebel.—Port Isaac.

Hypericum Androsæmum, L.—Near Hendra, St. Kew; Camel Valley, between Tresarret and Helland Bridges.

H. dubium, Leers.—Bank by the railway in the Camel Valley, near Tresarret Bridge; near the town of Bodmin, by a ditch on the road to Launceston. Taking into account the stations previously recorded ('Journ. Bot.,' ix., n.s., p. 296), this may prove to be rather common around Bodmin.

Linum angustifolium, Huds.—Near Denhams Bridge, by the St. Kew Road; between St. Endellion Church and Port Isaac.

Erodium moschatum, L'Her.—On earth-capped walls by a road near St. Kew Village, close to where *Trigonella* and other species with submaritime tendencies, as to distribution, occur.

E. maritimum, Sm.—Egloshayle, on a hedge-bank bounding the open marsh; Port Isaac.

Trigonella ornithopodioides, DC.—By the side of an elevated road near St. Kew Village, close to old workings of a quarry, in a spot open to breezes blowing from the Camel estuary up the vale of the tributary that runs into it at Amble, at a distance of nearly two miles from St. Kew Village.

Trifolium subterraneum, L.—St. Kew; also *T. striatum*, L., *T. filiforme*, L., and *Ornithopus perpusillus*, L. Near Denhams Bridge, towards St. Kew; here likewise with *T. striatum*, which latter grows also at Pencarrow, together with *T. filiforme*.

T. medium, L.—Helland; St. Mabyn; near St. Kew; between Washaway and Egloshayle.

T. hybridum, L.—Several plants by the roadside near Hendra farm-house, St. Kew.

T. fragiferum, L.—In the turf of the open marsh at Amble.

Vicia sepium, L.—A plant with flowers of a flesh-colour, near another with them of the ordinary colour, between Tresarret and Helland Bridges.

Orobus tuberosus, L., and var. b. *tenuifolius*.—Both type and variety on a hedge-bank by a lane between Amble and the Wadebridge and Camelford Road.

Prunus insititia, L.—Egloshayle, seemingly similar to the indigenous presumed *P. fruticans*, Weihe, occurring about Plymouth; Hendra, St. Kew.

P. domestica, L.—Hedges about St. Kew; hedge between Cakeval, St. Kew, and St. Endellion.

P. Cerasus, L.—Hedge by an orchard at St. Kew; hedge near St. Mabyn Village.

Rubus suberectus, Anders.—By the railway line and in an adjoining wood between the Tresarret and Helland Bridges, in the Camel Valley.

R. hirtifolius, Müll.—In a hedge between Amble and the Wadebridge and Camelford Road; by the road from Bodmin to Camelford, at Pencarrow. These records add to the Cornwall stations for this *Rubus*, recorded in 'Journ. Bot.', ix., n. s., p. 296. "About Bodmin" might well have been added to the other south-western locality, "near Plymouth," given under this in 'Manual of British Botany,' ed. 8.

R. villicaulis, W. & N., b. *adscitus*, Genev.—In the Camel Valley, between Tresarret and Helland Bridges.

R. umbrosus, Arrh.—Pencarrow.

R. corylifolius, Sm.—Between Denhams Bridge and Hendra, St. Kew.

R. cæsius, L.—Egloshayle, in hedges.

Rosa spinosissima, L.—So frequent in many of the hedges lying between the villages of St. Mabyn, St. Kew, and St. Endellion, as to supply one of the most striking botanical features of the tract; appearing with naked and also with aciculate peduncles, and in a hedge by a road from Amble to Denhams Bridge with light pink flowers, but of this variety only a few bushes. Near Slades Bridge, a short distance from Egloshayle.

R. tomentosa, Sm. — St. Mabyn; Camel Valley, between Tresarret and Helland Bridges; between St. Kew Village and Amble. Two of the thinner-leaved forms near Slades Bridge, Egloshayle; Pencarrow, by the road from Bodmin to Camelford (*R. scabriuscula*, Sm.); between St. Endellion Church and Port Isaac.

R. micrantha, Sm.—Between Tresarret and Helland Bridges; Pencarrow; Egloshayle; about St. Kew; near St. Endellion, and between the church and Port Isaac. Is not this really a common rose in all the counties along the English Channel?

R. systyla, Bast.—Hedge between Amble and Denhams Bridge. Probably in many places in the tract. My visit to it was too early in the season for the discrimination of many of the brambles and roses.

R. leucochroa, Desv.—Camel Valley, between Tresarret and Helland Bridges; hedges about St. Kew. This marked, and throughout Devon and Cornwall probably quite common, rose demands more attention from British botanists than it has hitherto received.

Mespilus germanica, L.—In four spots, three of them close together, in a hedge a little beyond the head of the hill you ascend after passing Denhams Bridge, on the way to St. Kew; also in three or four places in two exposed hedges between St. Mabyn Village and Tresarret Bridge. In the latter locality one of the hedges is near a roadway to a house. All circumstances connected with these stations being taken into account, I would place the *Mespilus* in the "denizen" rather than in the "alien" class for E. Cornwall.

Pyrus torminalis, Ehrh.—Rather common in hedges; by the Wadebridge and Camelford Road, between Three Holes Cross and Highway; hedge near Helland Church; in one place in a hedge between St. Mabyn Village and Tresarret Bridge; by the Bodmin and Camelford Road, at Pencarrow, in considerable quantity; hedge between Washaway and Egloshayle; high bushes with a few corymbs of flowers in a hedge in the vale a little below St. Kew Village.

P. Malus, L., a. *acerba*.—Hedge between Washaway and Egloshayle. b. *mitis*.—Hedges; near St. Mabyn; by the Wadebridge and Camelford Road, between Three Holes Cross and Highway; between Cakeval, St. Kew, and St. Endellion.

Lythrum Salicaria, L.—Damp spot by the roadside near Cakeval, St. Kew.

Callitriche obtusangula, Le Gal.—In the stream at Amble, and in a pool by the road thence to St. Mabyn. I believe an addition to the E. Cornwall list.

C. stagnalis, Scop.—Egloshayle. Probably common.

Cotyledon Umbilicus, L.—This very general species in the south-west of England may be seen high up on the elevated and exposed tower of St. Mabyn Church; a proof of the damp atmosphere of the locality.

Apium graveolens, L.—Egloshayle.

Petroselinum segetum, Koch.—Common. In many places about St. Kew; Egloshayle.

Torilis nodosa, Gaertn.—About Amble, St. Kew; Egloshayle; between St. Endellion Church and Port Isaac. A species of warm banks and low dry roadsides.

Fœniculum vulgare, Gaertn.—Near houses at Denhams Bridge; Amble. There is little doubt derived from ancient cultivation.

Chærophyllum Anthriscus, Lam.—Between St. Kew and Amble, mostly on banks near the farm-buildings at Carclase; some plants attaining great luxuriance, June, 1882. St. Endellion, between the stones of a wall or hedge-bank very near the church. So far as I have seen, this is a very local species in Devon and Cornwall.

Conium maculatum, L.—Between St. Kew and Amble; St. Endellion and Port Isaac; between Washaway and Egloshayle.

Smyrnium Olusatrum, L.—St. Kew Village. Further observations only tend to strengthen the belief that this is no more than a perfectly naturalised species in Devon and Cornwall (see remarks in 'Flora of Plymouth,' p. 177).

Viburnum Opulus, L.—Helland; near St. Kew, &c.

Valerianella Auricula, DC.—Between St. Kew and Amble, and near Hendra.

Carduus tenuiflorus, Curt.—Between St. Kew and Amble; St. Endellion.

Serratula tinctoria, L.—Between Tresarret and Helland Bridges; between Hendra and St. Kew Village.

Artemisia Absinthium, L.—St. Endellion, but to all appearance derived from ancient cultivation.

Inula Conyza, DC.—Helland; St. Kew; Egloshayle.

Helminthia echioides, Gaertn.—Between St. Kew and Amble; Egloshayle; Port Isaac.

Taraxacum officinale, Wigg., d. *palustre*.—Blisland; between Washaway and Egloshayle.

Ligustrum vulgare, L.—Common, and certainly indigenous.

Cuscuta Epithymum, Murr.—Between Amble and the Wadebridge and Camelford Road.

Digitalis purpurea, L.—A plant with flowers of a delicate flesh-colour, on a hedge-bank near St. Mabyn, June, 1882.

Bartsia Odontites, Huds., a. *verna*.—In a neglected field by a road from Amble to the Wadebridge and Camelford Road, with *Valerianella dentata* and other agrarian weeds. In the paper before referred to I recorded the other variety, b. *serotina*, from the tract.

Orobanche major, L.—Near St. Kew Village, in four spots, on *Ulex europæus*.

Verbena officinalis, L.—Between St. Kew and Amble; St. Endellion.

Origanum vulgare, L.—Between St. Mabyn Village and Denhams Bridge.

Salvia Verbenaca, L.—Amble, on a bank thence by the road to St. Mabyn; Egloshayle. Partial to the warmest spots, and when off limestone generally very local.

Melittis Melissophyllum, L.—Pencarrow, in plenty; between Washaway and Egloshayle. A considerable portion of the tract is too exposed and destitute of wood to suit this species.

Ballota nigra, L.—Egloshayle; St. Endellion.

Lamium album, L.—Very near a house in the Camel Valley, between Tresarret and Helland Bridges (see remarks in 'Journ. Bot.,' 1880, p. 298).

Ajuga reptans, L.—Noticed with claret-coloured flowers by the Bodmin and Camelford Road, at Pencarrow.

Lithospermum officinale, L. — By the railway in the Camel Valley, just below Tresarret Bridge.

Myosotis cæspitosa, Schultz.—Amble; between Cakeval, St. Kew, and St. Endellion.

M. repens, Don.—Near Helland; in a marshy piece of ground between St. Mabyn Village and Tresarret Bridge.

M. collina, Reich.—Egloshayle; St. Endellion.

Symphytum officinale, L.—Roadside very near St. Mabyn Village, as an outcast or escape from cultivation.

Plantago maritima, L.—By the Wadebridge and Camelford Road, between Three Holes Cross and Highway; Washaway. Affording one of the submaritime features in the vegetation of the tract.

Beta maritima, L.—Egloshayle.

Rumex pulcher, L.—Near Denhams Bridge, towards St. Kew, and between the latter village and Amble; between Washaway and Egloshayle. Certainly indigenous.

Parietaria diffusa, Koch.—Port Isaac.

Ulmus suberosa, Ehrh., b. *glabra*.—In hedges, as a denizen at least.

Quercus Robur, L., c. *sessiliflora*.—A considerable portion of the oak in the hedges seems to be this. Trees in a wood between Washaway and Egloshayle.

Potamogeton crispus, L.—In the stream at Amble, which place being in the parish of St. Kew, the station is probably identical with that recorded as "St. Kew" in Keys's 'Flora of Devon and Cornwall,' on the authority of Mr. Tellam.

Orchis latifolia, L.—About St. Kew; in a waste marshy piece of ground between St. Mabyn Village and Tresarret Bridge. Only the ordinary form of this found. I looked in vain for the peculiar *Orchis* of the Lizard district, referred to in my 'Flora of Plymouth,' p. 324, under "*O. incarnata*," as having been seen by me growing there. I have no doubt this latter is the species of Mr. C. B. Clarke's paper, recently published in 'Journal of the Linnean Society,' vol. xix., 206–8, entitled, "On a Hampshire Orchis not represented in 'English Botany,'" especially as Mr. Clarke states it to occur in Cornwall. I am quite willing to adopt the conclusion that the ordinary British so-called "*Orchis incarnata*," inclusive of examples from a "bog on Crownhill Down" ('Flora of Plymouth,' p. 324), is but a form of *O. latifolia*, whilst that occurring in Hampshire and at the Lizard is really a distinct species. I believe the Cornish plant was first found by Mr. Ralfs, of Penzance, some years ago.

Habenaria chlorantha, Bab.—On the lawn at Lavethan; between Washaway and Slades Bridge.

Listera ovata, Brown.—Lavethan; near Tresarret Bridge.

Allium vineale, L.—Near Amble.

Juncus glaucus, Sibth.—Denhams Bridge; by the road to St. Mabyn from Amble; between Cakeval, St. Kew, and St. Endellion. Local in Devon and Cornwall.

Carex muricata, L.—By a roadside at Pencarrow; near St. Mabyn.

C. sylvatica, Huds.—By roadside at Pencarrow.

C. distans, L.—In the marshy ground at Amble, with other submaritime vegetation.

Agrostis setacea, Curt.—Washaway.

Milium effusum, L.—In one spot, in proximity to a wood, between Washaway and Slades Bridge.

Avena flavescens, L.—Near Denhams Bridge, towards St. Kew; St. Endellion.

Sclerochloa loliacea, Woods.—Port Isaac.

Bromus erectus, Huds.—On and by a boundary wall or hedge of a plantation by the turnpike road at Washaway; in considerable quantity, and extending for very many yards; and, if not indigenous, evidently established at the spot for some considerable time.

B. sterilis, L.—One of the commonest grasses by dry roadsides and on warm banks.

B. racemosus, L.—By the road to St. Mabyn from Amble.

B. commutatus, Schrad.—Near St. Mabyn Village; St. Kew, in many places; between St. Endellion and Port Isaac. I am inclined to consider both this and *B. racemosus* indigenous species to Devon and Cornwall.

B. mollis, b. *glabrescens*.—In a field of grass near Helland; near St. Mabyn.

Lomaria Spicant, Desv.—Near Cakeval, St. Kew.

Asplenium lanceolatum, Huds.—A plant or two on a wall very near the town of Bodmin, by the road to Launceston, June, 1882.

Aspidium aculeatum, Sm.—Hedge-banks by the road near Cakeval, St. Kew; in one place between St. Endellion Church and Port Isaac.

A. angulare, Willd.—Commoner in the tract than I supposed when I noticed its occurrence at St. Mabyn, &c. ('Journ. Bot.,' 1880, p. 298). Helland; St. Kew, in many places.

Lastrea Filix-mas, Reich., c. *Borreri*.—Pencarrow.

ON MSS. NAMES AND *NOMINA NUDA*.

By Henry Trimen, M.B., F.L.S.

Mr. Britten's remarks in the February number on the inattention of botanists to Art. 50 of the "Laws of Botanical Nomenclature" will do good if they contribute towards bringing about a general conformity in practice, which for convenience' sake is much to be desired.

But the writer of the note has mixed up two distinct things—first publication and subsequent quotation. The botanist who first publishes a name and description of a species cannot, if the plant has been carefully worked out and named in MS. by a previous botanist, neglect to use his name and acknowledge its source. This is a spontaneous act of courtesy and justice, and no "Rule" can affect the practice. Mr. Britten mentions the Welwitsch collections, and certainly it is impossible that any one who had the advantage of profiting by the MS. descriptions and notes of that accurate botanist could help adopting his names and authority.

The question of the use of *nomina nuda*, names printed without descriptions, is much the same. These names are not "published" in a scientific sense, but their claim to adoption and recognition may often be very strong, and the systematist who first describes the species cannot neglect them. Thus when Mr. Hiern, in 1876, first properly published the species of Coffee already well known as *Coffea liberica*, Hort. Bull., he did well to adopt that *nomen nudum* from a nurseryman's catalogue, instead of inventing a new name. But I think that botanists now are correct in writing *C. liberica*, Hiern, in accordance with Article 50. So, too, with certain *nomina nuda* printed in the Kew Report for 1880. They represent the results of hard work at a troublesome set of plants, and are printed for the convenience of those to whom plants have been distributed, and no writer on the Rubber-yielding species of *Landolphia* and *Willughbeia* could be justified in neglecting them.*

I see no difficulty, then, in accepting the names in both the columns printed at p. 54 of Mr. Britten's article. Those in the first are proper and necessary in original publication; those in the second may be legitimate and correct for use by subsequent writers.

A CONTRIBUTION TOWARDS A FLORA OF THE TEIGN BASIN, S. DEVON.

By the Rev. W. Moyle Rogers, F.L.S.

(Continued from p. 209.)

Carex divulsa, Good.—Trusham; Ashton; Haldon; Chudleigh (Mr. Parker in Stewart's Flora of Torquay); Bovey Tracey; by Pen Wood. In lanes and fairly sheltered places still more frequent than the last.

C. stellulata, Good.—This, with *C. lævigata*, Sm., and *C. lepidocarpa*, Tausch., are the commonest wet land sedges of the district.

C. remota, L., and *C. sylvatica*, Huds.—The common wood and ditch species. The only specimen in the Jones Herbarium labelled *C. axillaris* ("Underhill Lane, Lympston"), appears to be ordinary *C. remota*. I may add that the collection includes *C. Pseudo-cyperus*, from "Haven Banks, near Exeter," and *C. pallescens*, from "Ilsington;" but otherwise it is of no value as representing the rare species given for the county in Fl. Dev., several of which are reckoned as Devon plants solely on the authority of Jones' and Kingston's work.

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* Attention has been called to these in a brief note by the Editor (see 'Journ. Bot.,' 1881, p. 381). I must confess myself entirely unable to appreciate the ground upon which their publication is condemned as "very reprehensible." It may from the strict technical standpoint be urged that, as a rule, it is *undesirable* to print names of new species without descriptions (and this is perhaps what is meant); in the case in question, however, it is distinctly stated that descriptions will shortly follow.

[Perhaps "undesirable" would be a better word than "very reprehensible" in the passage referred to; but the inconvenience attaching to the publication of the names referred to are, I think, obvious. In the first place, no author's name is appended to the new species, as is customary in such cases; and although we are told that "the assistant-director proposes to communicate.... descriptions of the new species to the Linnean Society," it is not clear that *he* is the authority for them, nor is his name given, so far as we are aware, anywhere in the Report. Again, while the Report is dated January 1, 1881, it did not as a matter of fact appear until December of that year; and that a difference of an even shorter period of time may affect priority may be seen by referring to this Journal for 1874, p. 152. In hardly any instance is any distinguishing characteristic of the new species given, so that they seem to me simply *nomina nuda* until authenticated by the promised paper in the Linnean Transactions.—Ed. Journ. Bot.]

C. ovalis, Good.—Moreton; near Dunsford Bridge; Doddiscombsleigh; about Bottor; by the river at Hennock and Trusham; Haldon (Mr. Parfitt in Rav. Fl.); Chudleigh (Fl. Dev.). By no means common in the district, notwithstanding these numerous stations.

C. vulgaris, Fries.—Trusham, in meadow; Bovey Heathfield. Rare.

C. glauca, Scop.—Far the commonest species.

C. pilulifera, L.—Christow Down; Ashton; Haldon (Mr. Parfitt in Rav. Fl.). This and the next are far from generally distributed.

C. præcox, Jacq.—Near Dunsford; Haldon, in great quantity; Trusham, rare; Chudleigh.

C. pallescens, L.—In Ashton and Trusham, fairly frequent; but not observed elsewhere.

C. panicea, L.—Near Moreton; Ashton; Trusham; Haldon (Mr. Holmes in Keys' Fl.); Bovey Heathfield; Knighton Heath. Only locally abundant.

C. binervis, Sm.—Moreton; Ashton; Haldon (Rav. Fl.); Bovey Heathfield. Usually in great quantity where it occurs.

C. hirta, L.—Moreton; Trusham; Chudleigh (Stewart's Flora of Torquay); Teigngrace. Rather local.

C. paludosa, Good.—Meadow west of Newton Abbot; with the next, but in much less quantity.

C. riparia, Curt.—Between Dunsford Bridge and Christow, in ditches by roadside, in no great quantity, 1881; near Newton Abbot. Apparently absent from the actual banks of both the main river and the Bovey.

Anthoxanthum Puelii, Lec. & Lam.—Wolborough Common, in ground lately disturbed, by the road over the Common, for some distance and in considerable quantity, June, 1881. Canonteign Down, in a large stony enclosure, abundant, Sept. 1881. In the 8th edition of Babington's 'Manual' this grass appears to be admitted as a native of Britain. I think it quite possible that it may be native in Devon, though no doubt proof is still wanting.

Alopecurus agrestis, L.—Trusham, in one or two spots as a roadside casual.

Phleum pratense, L., b. *nodosum*.—By Fingle Bridge; about Moreton; Ashton; Trusham; Heytor Down. Rather frequent in the shallow rocky soil so common in the district.

Gastridium lendigerum, Gaud.—Between Ashton and Trusham, on a heath and in a stony field near, in great quantity, 1877; perhaps native. Trusham "New Cut," about twenty plants on a roadside bank, 1877; casual. These two stations are about two miles apart.

Agrostis setacea, Curtis.—By Fingle Bridge; Christow; Ashton; Trusham; Haldon (Jones' Bot. Tour); by Pen Wood; Knighton Heath; Newton Abbot. Locally common.

A. canina. L.—Haldon, common.

A. vulgaris, With., b. *pumila*.—In short turf on Haldon and Canonteign Down.

Phragmites communis, Trin.—Near Moreton; Newton Abbot. Elsewhere no doubt, but not common.

Aira flexuosa, L.—By Fingle Bridge; Dunsford Bridge and neighbourhood; Christow; Nitton Cleave; Haldon; Heytor. Locally abundant.

Avena flavescens, L.—Ashton; Trusham; Chudleigh (Fl. Dev.); Haldon. Common in the lower part of the Teign Valley.

A. fatua, L.—Ashton; Trusham. An occasional colonist in corn.

Kœleria cristata, Pers. Ogwell Common, in good quantity.

Glyceria fluitans, Brown, b. *pedicellata*.—About Moreton; Hennock; Trusham; Haldon; Newton Abbot. Often with the type, but seldom in such large quantity.

G. plicata, Fries.—Ashton; Hennock; Trusham; Doddiscombsleigh, *Briggs*. Haldon; Chudleigh; Bovey Tracey; Ilsington, *Briggs*. Frequent.

Sclerochloa procumbens, Beauv.—Near Newton Abbot.

S. rigida, Link.—Moreton; Trusham, on "Black Lea" Down, as well as on walls in the village, &c.; Chudleigh Rocks. Probably about every village, and not infrequent in stony fields.

Poa nemoralis, L.—Christow; between Hennock and Bovey Tracey, *Briggs*. Nitton Cleave; Trusham; Chudleigh Rocks; Teigngrace. Decidedly local, but fairly abundant in most of these stations.

P. compressa, L.—Bank between Fingle Bridge and Drewsteignton, *Briggs*. Doccombe (between Moreton and Dunsford); Hennock; Trusham, on the dry stony but grassy hedge-banks in Teign Lane, and even among furze in a field border, as well as in plenty on old walls; on walls in Chudleigh, and on walls at Farley and Ranscomb, between Trusham and Chudleigh; Ilsington, and at hamlet between Ilsington and Bovey Tracey, *Briggs*.

Festuca Pseudo-myurus, Soyer.—Moreton; between Moreton and Lustleigh; Christow; Hennock; Trusham; Chudleigh (Fl. Dev.); Bovey Tracey (Fl. Dev.); Teigngrace; Newton Abbot; Wolborough Common. Usually on walls, but in Hennock and Trusham also on dry banks near the river, Ilsington, *Briggs*.

F. pratensis, Huds., b. *loliacea*.—About Moreton; between Chudleigh and Haldon.

Bromus giganteus, L.—Hennock; Trusham; Chudleigh; Chudleigh Rocks. Only locally common.

B. asper, Murr.—Christow; Ashton; Trusham; Chudleigh; Haldon; Knighton Heath. Commoner than the last, but far from generally distributed.

B. erectus, Huds.—Ashton, in field not far from the Rectory, a few plants here and there, 1881. Trusham, border of field by "New Cut," in patches for some distance, 1881. No doubt introduced with seed in both places.

B. secalinus, L.—Near Newton Abbot.

B. racemosus, L.—Ashton; Trusham; Chudleigh. In meadows by the Teign and by Bramble Brook. I think undoubtedly native.

B. commutatus, Schrad.—In grass fields at Trusham. Native or colonist.

Triticum caninum, Huds.—Wood by Chudleigh Rocks, in fairly good quantity.

Lolium italicum, Braun.—Trusham, as casual or colonist in lanes and field borders; rather frequent.

Hordeum pratense, Huds.—Meadows about Newton Abbot, in great quantity (Stewart's Fl. of Torq.).

Nardus stricta, L.—Haldon; Bovey Heathfield; Knighton Heath; Heytor Down. Locally abundant.

Lomaria Spicant, Desv.—Holly Street; Christow; Nitton Cleave; Ashton; Haldon; Trusham, in very small quantity; Moreton; Manaton; Lustleigh; Heytor Down; between Ilsington and Bovey Tracey, *Briggs*. Locally common.

Asplenium Ruta-muraria, L.—Moreton; Hennock; Trusham; Chudleigh; Ilsington, *Briggs;* Teigngrace.

A. septentrionale, Hull.—On some high rocks between Chudleigh and Dartmoor. First shown me by the late Rev. H. Roberts in 1877. Seen in considerable quantity in 1881 by Mr. Briggs and me. Certainly native.

A. lanceolatum, Huds.—Near Chagford, about twelve plants in crevices of a wall, *Briggs;* Hennock, on some huge granite boulders near Bottor.

Ceterach officinarum, Willd.—Christow, on old wall by the river; Ashton, on walls in the village and by the river; on walls at Trusham, between Trusham and Chudleigh, in Chudleigh, and between Chudleigh and Haldon; frequent. On Chudleigh Rocks.

Aspidium aculeatum, Sw.—Doddiscombsleigh, in plenty near the village, 1881, *Briggs;* Hennock (type and variety *lobatum*). Very rare.

A. angulare, Willd.—Dunsford; Christow; Ashton; Trusham; Chudleigh. Very abundant in the warmer parts of the district.

Nephrodium Filix-mas, Rich., b. *affine*.—Near Moreton; Trusham, on rather shady banks in several places. c. *Borreri*.—Nitton Cleave; Ashton and Trusham; frequent. Haldon; Ilsington, *Briggs*. A common form in most (or all) parts of the district.

N. æmulum, Baker.—Nitton Cleave, one or two plants, Sept., 1881, *Briggs*. Certainly very rare.

N. Oreopteris, Desv.—At Fernworthy, and between Beetor Bridge and Dartmoor, *Briggs;* by Dunsford Bridge, *Briggs;* Nitton Cleave, here and there.

Osmunda regalis, L.—Christow; Nitton Cleave; Haldon. Becoming very scarce.

Ophioglossum vulgatum, L.—In the Park at Whiteway, on Haldon.

Botrychium Lunaria, Sw.—Haldon (Miss Hunt, Rav. Fl.); in the Park at Whiteway, and near the racecourse.

Lycopodium inundatum, L.—Knighton Heath.

L. Selago, L.—Bog near Fennworthy, *Briggs;* Haldon.

Equisetum maximum, Lam.—Lane near Pen Wood; between Chudleigh and Haldon.

E. limosum, L.—Teigngrace, in great quantity.
Chara translucens, Braun.—Knighton Heath.
C. fragilis, Desv.—In a pool with the last on Knighton Heath.

CONTRIBUTIONS TO THE FLORA OF CENTRAL MADAGASCAR.

By J. G. Baker, F.R.S.

(Continued from p. 222.)

Clerodendron magnoliæfolium, n. sp.—A shrub or small tree, 10–15 ft. high, glabrous in all its parts, with drab lenticellate branchlets. Leaves petioled, oblong, acute, entire, deltoid at the base, 2–3 in. long, subcoriaceous, glossy, green on both surfaces, penninerved, with 6–8-jugate erecto-patent main veins. Flowers in lax terminal cymes, on curved ½–1½ in. pedicels; bracts minute, linear, persistent. Calyx above an inch long, black, subcoriaceous, with an oblong tube ½ in. diam. and five small equal deltoid-cuspidate teeth. Corolla white, with a cylindrical tube as long as the calyx and five subequal obovate segments half as long as the tube. Stamens 4, with filaments but little longer than the corolla-limb. Ovary 4-celled; cells 1-ovuled. Fruit not seen.—Woods of West Betsileo, flowering in December and January, *Baron* 93! Allied to *C. macrocalycinum*, Baker, and a third endemic species with a large calyx (*C. arenarium*, Baker), gathered by Bojer in the province of Imerina, and by Dr. Meller between Tamatave and Antananarivo. This latter is a shrub 6–10 ft. high, glabrous in all its parts, with brown lenticellate branchlets, opposite petioled oblong-lanceolate leaves 2–3 in. long, numerous flowers in a lax terminal cyme, a funnel-shaped membranous calyx ⅔ in. long ½ in. diam. at the throat, with five large equal deltoid teeth, a fragrant white corolla with a tube ¼ in. longer than the calyx, and five subequal orbicular segments ⅓-½ in. diam., and stamens and style not exserted beyond the corolla-limb.

Plectranthus Melleri, n. sp.—A perennial herb, with the young branchlets pilose. Leaves petioled, oblong, acute, membranous, 2–3 in. long, glabrous on both surfaces, crenate above the very gradually narrowed base. Flowers in lax peduncled lateral racemes, 2–3 in. long, 5–6 in a whorl from the central nodes; pedicels ¼-⅛ in. long; bracts very minute. Flower-calyx campanulate, finely pilose, ⅛-⅙ in. long, with a large ovate upper lip decurrent down the tube, and three deltoid-cuspidate lower segments. Corolla yellow, pilose, ⅓ in. long. with a funnel-shaped tube deflexed and dilated below the middle, a cucullate suborbicular lower lip as long as the tube containing the anthers, and a much shorter ascending oblong upper lip. In damp places between Tamatave and Antananarivo, alt. 3,000 ft., *Dr. Meller!* This falls in Bentham's section *Coleoides*, near *P. coloratus* and *Ecklonii*. Mr. Baron has gathered a closely-allied species (No. 127) in the forests of Betsileo, with a larger calyx with very small sharp teeth to the lower lip, but his specimens do not show the corolla satisfactorily, either for colour or form.

Micromeria madagascariensis, n. sp.—A perennial herb, with densely tufted obscurely pilose slender square trailing stems above a foot long. Leaves distant, opposite, shortly petioled, usually linear-oblong, entire, rarely ovate-oblong, obscurely crenate, obtuse, $\frac{1}{3}$–$\frac{1}{2}$ in. long, firm in texture, green on both surfaces, copiously gland-punctate beneath. Flowers few, solitary from the axils of the leaves on long pedicels with a pair of bracteoles at the middle. Calyx infundibuliform, pilose, 10-ribbed, $\frac{1}{6}$ in. long; teeth deltoid. Corolla-tube as long as the calyx; upper lip oblong, nearly as long as the tube; lower, of three smaller orbicular segments. Stamens shorter than the corolla.—Central Madagascar, *Dr. Parker*. "Scent like that of wild thyme." This genus, which has its head-quarters in the Mediterranean region, is near to the island. Two species are known in Abyssinia and one in South Africa.

Polygonum tristachyum, n. sp.—A tall shrub, glabrous in all its parts, with terete brown woody branches. Ochreæ greenish, membranous, not ciliated, $\frac{1}{3}$-$\frac{1}{2}$ in. long, clasping the stem tightly; petiole about $\frac{1}{2}$ in. long; blade broad-oblong, cuspidate, 2–3 in. long, rounded at the base, moderately firm in texture, green and glabrous on both surfaces, with 6–8-jugate distinct parallel arcuate-ascending main veins. Flowers in about three lax terminal racemes 3–4 in. long; bracts contiguous, but not imbricated, $\frac{1}{6}$ in. long, greenish, membranous, clasping the rachis except at the deltoid-cuspidate tip; flowers 1–3 to a node, with pedicels as long as the bract. Perianth greenish, infundibuliform, cleft nearly to the base into five lanceolate acute segments. Stamens 8, reaching to the tip of the perianth. Styles 3. "Fruit triquetrous, $\frac{1}{2}$ in. long, with a succulent pericarp."—Edges of woods and shrubby places, flowering in December and January in West Betsileo, *Baron* 137 !

Peperomia tanalensis, n. sp.—Stems densely tufted, erect, pilose, much branched, about $\frac{1}{2}$ ft. long. Leaves opposite or at the tip of the branchlets ternate, shortly petioled, oblong, acute, entire, about $\frac{1}{2}$ in. long, densely pilose, with a distinct midrib and two obscure side veins running from the base to the margin a short distance from the tip of the leaf. Spikes copious, slender, shortly peduncled, terminal, 1–1$\frac{1}{2}$ in. long; rachis glabrous; bracts peltate, glabrous, the lower distant, the upper contiguous. Ovary glabrous, with a sessile terminal stigma. Rocks in damp forests of the Tanala Country, *Baron* 311 !

Dilobeia, sp.—Dr. Parker sends a specimen, without flower or fruit, which no doubt belongs to this imperfectly-known endemic genus of *Proteaceæ*. It is a small tree, with young branchlets clothed with short ferruginous pubescence, and alternate leaves about a foot long, which in shape and texture resemble the fertile fronds of a *Platycerium*. They are twice forked dichotomously, with lanceolate segments, with rounded sinuses between them, with a small stalked gland in the centre, and the main lamina is narrowed very gradually into a short petiole. Native name *Vivaòna*. A full account of all that is known of the genus is contained in a paper by Dr. Baillon in 'Adansonia,' vol. ix., p. 243.

Viscum cryptophlebium, n. sp.—Stems stiff and woody, much branched, about ½ ft. long, terete, with about six distinct ribs, the ferrugineo-tomentose branchlets rather flattened below the nodes. Leaves opposite, round or oblong, rarely oblong-lanceolate, obtuse, ½–¾ in. long, obtuse or subacute, very rigid in texture, green and glabrous on both surfaces, the veins quite hidden, narrowed at the base into a short flattened petiole. Flowers in copious umbels of 3 on short peduncles, often 4 umbels to a node, two connate deltoid bracts forming a boat-shaped cup at the base of the three flowers. Pedicels very short, that of the central flower longer than the two side ones. Ovary clavate, under ½ in. long. Sepals 4, minute, deltoid. Berry oblong, 1-12th to 1-8th in. long, with a short pedicel, a short persistent cylindrical style and a capitate stigma.—Central Madagascar, *Dr. Parker*. Near *V. rotundifolium*, Thunb., of the Cape, and *V. Murchisonianum*, Schweinf., of Abyssinia.

Loranthus (*Dendropthoe*) microcuspis, n. sp.—A very much-branched small shrub, glabrous in all its parts, with pale stiff branchlets with short internodes. Leaves opposite, obscurely petioled, oblong, ⅓–½ in. long, with a distinct cusp at the tip, coriaceous in texture, green on both sides, rather shining, the veins entirely hidden. Flowers solitary, sessile at the tips of the branchlets. Calyx 1-12th in. long, with an oblong tube, large deltoid segments, and at the base a large oblique cupular bracteole. Corolla an inch long, curved, yellow and red or all red, slit down one side below the middle, its 5 segments lanceolate, ⅙ in. long. Anthers 1-12th in. long, nearly sessile at the base of the corolla-segments. Style just exserted beyond the corolla-segments; stigma capitate.—Forest of East Betsileo, flowering in January, *Baron* 54! Easily marked from the other Madagascar species of this section by its sessile solitary terminal flowers.

Loranthus (*Dendropthoe*) pachyphyllus, n. sp.—A shrub, glabrous in all its parts, with terete pale branchlets. Leaves opposite, obscurely petioled, oblong, obtuse, 1–1½ in. long, very thick and rigid in texture, the veins including the midrib entirely hidden, the base narrowed. Umbels 3–4-flowered, sessile in the axils of the leaves; pedicel none. Calyx ⅛ in. long, with an oblong tube, deltoid teeth, and a pair of small deltoid bracteoles at the base. Corolla curved, subcylindrical, an inch long, slit down the lower side to the middle; teeth 5, lanceolate, ⅛ in. long. Anthers 1½ in. long, subsessile at the base of the corolla-segments. Style as long as the corolla.—Forests of East Betsileo, *Baron* 224! Native name *Tongoalahy*.

(To be continued).

SHORT NOTES.

Additions to the Flora of Dorset. — While staying at Swanage from the 28th to the 30th May, we were fortunate enough to discover several plants of interest, including two new to Dorsetshire. *Arum italicum*, Mill., occurred among brambles near Swanage, with both open and unopened spathes and young fruit. This plant has hitherto only been recorded for the Isle of Wight, South Hants, and West Cornwall, and will probably be found also in Sussex and Devonshire. The time of its appearing accounts, no doubt, for its being overlooked in this locality. The leaves are like those of the Isle of Wight plant, and unlike those of the Continental form in not being veined with white, though the veins are very distinct, and of a lighter colour than the rest of the leaf; some of the leaves were spotted with black. *Orobanche amethystea*, Thuill., was very abundant in waste ground facing the sea, between Seacombe and St. Alban's Head. It was parasitic on *Daucus Carota*. The colour of the corolla was much paler than in the Kent plant, the flowers being whitish with lilac veins. This plant has not hitherto been recorded from Dorsetshire, though it has been found in the other counties along the south coast. The spring-flowering form of *Gentiana Amarella* was plentiful along the Dancing Ledge. At Chapman's Pool we found a tall variety of *Carex glauca* with aristate glumes. *Geranium purpureum*, Forst., was growing on a chalky bank above Punfield Cove, Swanage, the plant and the locality probably intended in Ray's Synopsis, ed. iii., p. 358,—"Geranium lucidum saxatile, foliis Geranii Robertiani D. Sher. *Syn.* II. 218. Ger. Saxat. Robertiano simile Anglicum *Schol. Botan.* 'Tis of the saxatile kind, having frequent joynts. In several places near the shore. I have found it near *Swanning* in *Dorsetshire;* Dr. *Sherard.* (On the shore of *Selsey-Island* plentifully; D. *Dillenius*, in company with Mr. *Manningham.*") A very interesting monstrosity of *Carex glauca* occurred above Peveril Point, in which both the female spikes arose on long peduncles from utricles in the axils of the leafy bracts; the lowest male spike was similarly situated, but the peduncle was so short that it did not protrude from the utricle. There can be little doubt but that the peduncles in this case correspond to the seta in *Uncinia* and the psyllophorous Carices, which has been shown by Mr. Dyer (Linnean Journ. xiv. 154) sometimes to bear rudimentary flowers. In Durleston Bay we found a specimen of what Milde (Monog. Equiset., p. 250) calls *Equisetum Telmateia*, var. *serotinum*, var. *proliferum*, which consists of a branch-bearing stem, on which is a spike of fructification, terminated by another branch-bearing portion. The top of the spike exhibits the transition from the sporophores into the brown acuminate leaves. This last point, which is so interesting from a morphological point of view, is not noticed by Milde.—H. N. Ridley & W. Fawcett.

Cerastium pumilum, *Curt.*, in Surrey—For some years past I have searched the neighbourhood of Croydon for this plant—Dickson s habitat, "dry banks about Croydon," being no guide to any special locality. I have examined many hundreds of specimens of *Cerastia* without success, until one day last June, passing over Banstead Downs, near Epsom, my attention was called to a *Cerastium* growing with *Viola hirta* var. *calcarea*, *Alsine tenuifolia*, &c., which, after carefully examining, I came to the conclusion was either *C. pumilum* or something that had not been described as British. To make sure I sent a specimen to Dr. Boswell, who replied, "Your plant cannot well be anything else than *pumilum;* in fact it is nearer the figure in Curt. Fl. Lond. of Dickson's Croydon plant than the Isle of Wight plant in E. B." Curtis's plant seems very distinct, but many others are referred to it that certainly cannot belong. The so-called "*pumilum*" from Lowestoft Denes (Mr. Linton!) and somewhat similar specimens from Felixstowe (Dr. Hind!) do not seem to me to belong to *C. pumilum* at all. May it not be doubted whether true *pumilum* has ever been found in sand? In Norfolk and Suffolk, on the sandy "brecks" of the drift, I have repeatedly searched for any *Cerastium* like *pumilum*, but without success. The continental plants I possess named "*pumilum*" are not the plant of Curtis.—Arthur Bennett.

Carduus lanceolato-palustris in South Hants.—In June last I observed at Brockenhurst, between the town and the station, a remarkable thistle growing by a ditch on the east side of the road, with *Carduus palustris*, *C. lanceolatus*, and *C. arvensis*. On examination there seems little doubt that it is a hybrid between *palustris* and *lanceolatus*, the closely aggregated anthodes of small size and dark purple colour being almost typically *palustris;* the nearly naked stem and leaves lanceolate in outline, but with narrower lobes, the terminal lobe being very long and strongly spined being as suggestive of *lanceolatus;* it may be briefly characterised as *lanceolatus* with the anthodes of *palustris*. The plant with fully open flowers was under two feet in height.—G. C. Druce.

Medicago minima, *Lam.*, in Sussex. — Another interesting addition has been lately made to the list of Sussex plants by the discovery, last month, of *Medicago minima* by the Rev. E. N. Blomfield, on Camber Sands, near Rye, East Sussex, where it was growing in company with another rare Sussex plant, *Trifolium suffocatum*. The latter was, according to Mr. Hemsley's list, previously known to occur only on the Castle Hill, Hastings, and at Littlehampton. Both these plants occurred in considerable abundance in the sandy turf towards the Preventive Station, nearly at the south extremity of the sands.—F. C. S. Roper.

Variety of Ophrys apifera.—A singular form of *Ophrys apifera* was gathered in July last by Mrs. Pattinson, at Seaton, South Devon. Two plants were found on some waste ground near an old quarry, both bearing flowers of the same abnormal type, while in company with several of the ordinary form. The labellum was scarcely distinguishable from the sepals, except that it was velvety and slightly broader, the sepals were rather narrower than usual, and the petals smaller and less spreading. The sepals and labellum were of one uniform dull rose-purple colour. The abnormal plants appeared to be fertile. The pollinia were conspicuous, and each plant bore two or three well-developed fruits. The tubers and leaves were normal, the bracts rather narrow, and the plants measured about fourteen inches from the tubers to the top of the spikes. All the flowers on these two plants were of the abnormal form. One of the specimens was submitted to Mr. J. G. Baker, who says, "A similar but not identical form has been found near Reigate, and figured by Reichenbach under the name of *Ophrys Trollii.*"—F. T. Mott.

Nitella tenuissima in Wales.—In a box of Potamogetons and Characeæ gathered at Cors Bordeilio, Anglesea, kindly sent me by Mr. J. E. Griffith, I find specimens of *Chara polyacantha*, Braun., and *Nitella tenuissima*, Kütz., which have not hitherto been recorded from Wales. The habitat for the *Nitella* is very interesting, being so far from its recorded British stations, *i. e.*, Cambridgeshire and Norfolk. It may be noted that in Cambridgeshire, as in Anglesea, it grows with *Chara polyacantha.*—Arthur Bennett.

Jungermannia Helleriana, *Nees*, in Britain.—During a botanical ramble in Mardale, Westmoreland, on the 12th of May last, I found numerous specimens of *Jungermannia Helleriana*, Nees, growing on the decaying trunks of fallen birch trees. Since this plant has not hitherto been recorded as British, I hereby place it on record; specimens of it will appear in the forthcoming fasciculus of Carrington and Pearson's 'Hepaticæ Britannicæ Exsiccatæ.' In a future number of this Journal I hope to give a more detailed account of the species and its discovery.—G. Stabler.

Notices of Books.

Early European Researches into the Flora of China. By E. Bretschneider, M.D. London: Trübner, 1881. Pp. 194.

Botanicon Sinicum: Notes on Chinese Botany from Native and Western Sources. Same author and publisher, 1882. Pp. 228.

In these two small works we have an amount of information regarding the history of Chinese botany, the importance of which it would be difficult to over-estimate. Dr. Bretschneider is well known as a careful worker at the subject, and these two volumes cannot fail to add to his reputation.

In the first of them the author brings together the results of early European researches into the Flora of China, beginning with the notices of plants given by Mendoza, a Franciscan monk, who in 1585 printed in Spanish a history of the country; going on through the information supplied from time to time by the Jesuits; taking up James Cunningham's discoveries (1700–1701), the researches of Osbeck, Sparrmann, and other Swedish collectors, and ending with the botanical notices in the 'Description Générale de la Chine,' published in 1785 by the Abbé Grosier. In the words of the author, he starts "from that period when these regions became first known to us through the learned and hard-working Jesuit missionaries, the illustrious pioneers of oriental studies in the far East," while he does not "extend the area of [his] researches beyond the Linnean period." Some notion of how much was noticed by these early observers, as well as of how much yet remains to be done in China, may be gathered from the remark that "there are still in the interior of China many common Chinese plants known to us only from the description of the Jesuits, as for example the tree which yields the varnish for making the well-known Chinese lacquered ware, or the *Illicium anisatum* of China (Loureiro). No specimens of these trees have, as far as I can judge from what has been published with respect to Chinese plants, come to the notice of later botanists." Dr. Bretschneider has taken every care to identify when possible the plants mentioned by the various authors he quotes, giving in many cases the name in Chinese characters; and in glancing through the pages many interesting facts meet the eye. Litchis, for example, are first mentioned in Europe by Mendoza in 1585, who says, "the Chinese have a kind of plum that they call *leechias*, of an excellent gallant taste." The same author mentions the cultivation of maize among the Chinese, which is interesting in connection with the fact that maize is not indigenous to China, but has been introduced since the discovery of America. Ginsing is mentioned by Semedo in 1643, who is the first of the missionaries to notice tea, and to give an account of the preparation and use of the leaves. The same writer refers to the lamp-wicks, with which large boats are often laden, and which, as Dr. Hance has shown (Journ. Bot., 1875, pp. 106–7), are the pith of *Juncus effusus*. *Pæonia Moutan* is first mentioned by Martini in 1655, and we might proceed, did space permit, to extract similar items of information.

The plants of James Cunningham, "the first European who made botanical collections in China, and whose rich herbarium arrived safely home," receive detailed notice, and a few of the plants are identified. Dr. Bretschneider will be glad to know that these collections still exist in the British Museum, scattered through various volumes of the 'Sloane Herbarium.' Most of the specimens could be readily identified by anyone familiar with Chinese botany; they are mostly localised under the general title of "China," but some (Herb. Sloane, 255, 257, 263, 267) are from "Emuy" (Amoy), and others from Chusan (H. S., 252, 269, 272). Among them is the type specimen of *Cunninghamia sinensis*, established by Brown in 1826, and named by him "to commemorate the merits of Mr. James Cunningham, an excellent observer in his time, by whom this plant was discovered, and in honour of Mr. Allan Cunningham" (Misc. Bot. Works, i. 461).

Many of Cunningham's plants were described by Petiver and Plukenet; like so many of the collections in the Sloane Herbarium, they have been to a great extent lost sight of, but contain much of interest. Among the plants first described by Petiver (from Cunningham's specimens), is *Camellia japonica*. It may be noted, by the way, that the National Herbarium at South Kensington contains other early Chinese collections besides those included in the Sloane Herbarium, notably a large series from Sir George Staunton, with others from Bladh, Nelson and Robertson.

With regard to the neglect of d'Incarville's collections by the French Museum, referred to by Dr. Bretschneider, we learn from Mr. F. B. Forbes that the packet referred to has been found intact by M. Franchet, in good order, with the original tickets and with Adrien de Jussieu's manuscript notes on many of the specimens. M. Franchet has determined the collection, and has either already published a list or is about to do so.

Dr. Bretschneider alludes to the plants of Loureiro, which formed part of the Banksian Herbarium, and which are incorporated with the national collection. His inference, however, "from some references found in Benth. and Hook., Gen. Plant," that "these plants have been badly preserved, and their examination of little use for deciding dubious questions," is hardly justified by the specimens themselves taken as a whole, although in some cases they are very fragmentary. We have on a former occasion* drawn attention to the important collections made during the last century, which are included in the Banksian Herbarium, and which have been too much overlooked by recent authors. Much more will probably be done in the way of identifying Loureiro's plants; Dr. Bretschneider has brought together with great care, from various sources, all the identifications which he could find. There is a good index of genera; we should have been glad had the species also been enumerated therein.

Dr. Bretschneider's other work, the 'Botanicon Sinicum,' may in a sense be regarded as an enlarged and corrected edition of his essay 'On the Study and Value of Chinese Botanical Works,' published more than ten years since. It is divided into three parts. The first, a "Contribution towards a History of the Development of Botanical Knowledge among Eastern Asiatic Nations'; the second, 'On the Scientific Determination of the Plants mentioned in Chinese books'; the third, 'An Alphabetical List of Chinese Works, with an index of Chinese Authors.' A useful "list of about seventy of the more conspicuous hills and mountains of China Proper" is given as an appendix. It would be difficult, in the space at our disposal, to give anything like an adequate notice of this volume, which indeed, from its nature, does not readily lend itself to a general notice; but for the student of the history of Chinese botany it is at least as indispensable as the work already noticed. Dr. Bretschneider modestly says that he is "neither a sinologue nor a botanist, [his] knowledge of Chinese as well as of botany being quite limited." This is no doubt true in a certain sense; but the general reader will form a very different and far more flattering estimate of the author's qualifications for the work which he has undertaken.

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* Journ. Bot., 1880, pp. 90, 91.

We may mention here that we have been from time to time in receipt of articles extracted from Chinese newspapers, which only want of space prevents us from reprinting. These do not seem to be included in the list of Dr. Bretschneider's publications, prefixed to the 'Botanicon Sinicum'; and the present seems a suitable opportunity for expressing a hope that the author will one day see his way to issuing those papers, which always contain valuable matter, in a readily accessible form. J. B.

The recently issued (June) part of the 'Icones Plantarum,' contains figures of four of Mr. Bentham's new genera of grasses, *Cryptochloris*, *Craspedorachis*, *Schaffnera*, and *Cleistachne*; *Amomum pulchellum* of Thwaites (C.P. 2736) stands as the type of a new genus, *Cyphostigma*, Benth.; other new genera are *Campylosiphon*, Benth. (*Burmanniaceæ*), *Soyauxia*, Oliv. (*Passifloraceæ*), and *Notobuxus*, Oliv. (*Buxeæ*.)

Baron F. von Mueller has issued the title-page and index for vol xi. of his 'Fragmenta,' with supplementary lists of algæ, mosses, lichens, and fungi.

The 'Proceedings of the Bristol Naturalists' Society,' vol. iii., part 3, contains a continuation of Mr. Cedric Bucknall's enumeration of the fungi of the district (with two plates), and of the 'Flora of the Bristol Coal-field' (to the end of *Corollifloræ*).

Mr. Hemsley's portion of the 'Biologia Centrali-Americana' continues to make rapid progress; the part issued in June completes the second volume, and concludes the *Monopetalæ*.

A committee of 'The Arbroath Horticultural and Natural History Association' has issued a handy list of the Flora of Arbroath and its neighbourhood, which is intended as a field companion and as a preliminary list, on the basis of which it is hoped eventually to frame a complete Flora. We are glad to learn from the preface, that the Rev. John Ferguson and Mr. J. Roy have in preparation 'A Guide to the Botany of the North-east of Scotland.'

New Books.—A. de Gubernatis, 'La Mythologie des Plantes,' vol. 2 (Paris, Reinwald.)—B. D. Jackson, 'Vegetable Technology' (London, Dulau.)—J. Smith, 'Dictionary of Economic Plants' (London, Macmillan.)—P. Saccardo, 'Sylloge Fungorum omnium hucusque cognitorum,' vol. i. Pyrenomycetes (Padua).—E. Strasburger, 'Ueber den Bau und das Wachsthum der Zellhäute' (Jena, Fischer). — C. v. Nägeli, 'Untersuchungen über Niedere Pilze' (Munich, Oldenbourg). — H. Vöchting, 'Die Bewegungen der Blüthen und Früchte' (Bonn, Cohen).—J. Moeller, 'Anatomie der Baumrinden' (Berlin, Springer).

ARTICLES IN JOURNALS.—JULY.

Annales des Sciences Naturelles (Botanique). (tom. xii. nos. 2–6, April.)—L. Guignard, 'On the Embryology of *Leguminosæ*' (tt. 8.)—P. Sagot, 'Plants of French Guiana' (contd.)—M. Treub, 'Researches on *Cycadeæ*' (tt. 7.)—A. Trécul, 'On the Order of Appearance of the first vessels in the aerial organs.'—(tom. xiii., no. 1, May.)—J. Vesque, 'The Vegetable Species considered from the standpoint of comparative anatomy.'—Id., 'Anatomical and descriptive Monograph of *Capparideæ*' (tt. 2.)—(nos. 2 & 3, June.) —L. Guignard, 'On the Embryo-sac of Angiosperms' (tt. 5).

Botanical Gazette (June.)—A. F. Foerste, 'Leaves of Aquatic Plants.'—M. S. Bebb, 'Introduced Plants of Rockford, Illinois.'

Botanische Zeitung.—T. W. Englemann, 'On the detection of Acids in Plant-cells by the Spectroscope.'—E. Schmidt, 'On Plasma-bodies of the jointed Laticiferous Vessels' (1 tab.)—A. Zalewski, 'On the nuclear division of the pollen mother-cells of certain *Liliaceæ*.'

Bulletin of Torrey Bot. Club.—S. H. Wright, *Dichronema Reverchoni*, n. sp.—F. L. Scribner, 'Grasses collected by C. Pringle in Arizona and California.'

Bull. Soc. Royale Bot. de Belgique.—F. Crépin, 'Primitive Monographiæ Rosarum' (contd.) (*Rosa involuta*, var. *Nicholsonii*, a new form collected by Mr. G. Nicholson, at St. Cyrus, Kincardineshire.)

Grevillea (June).—M. C. Cooke, 'Exotic Fungi.'—Id., 'New British Fungi' (*Agaricus* (*Mycena*) *pseudo-purus*, n. sp.)—Id., 'Australian Fungi.'—C. B. Plowright, 'On Germination of the *Uredines*' (1 tab.)—C. Kalchbrenner, 'Fungi Macowaniani.'

Journal of Linnean Society (Botany, vol. xix., no. 120, June 26). —M. T. Masters, 'On the Foliation and Ramification of *Buddleia auriculata*.'—Id., 'On a new *Gossypium* [*G. Kirkii*] from E. Tropical Africa.'—R. J. Lynch, 'On Cross-fertilization in *Roscoea purpurea*.' C. B. Clarke, 'On a Hampshire Orchis' [*O. incarnata*, L.], (1 tab.) —W. R. M'Nab, On *Abies Patonii*.'—G. Henslow, 'On a proliferous Mignonette' (1 tab.)—Id., 'On staminiferous Corollas of *Digitalis purpurea* and *Solanum tuberosum*' (1 tab.)—F. Darwin, 'On the connection between Geotropism and Growth.'—G. Dickie, 'On Algæ from the Himalayas.'—B. D. Jackson, 'On negative Heliotropism in *Fumaria corymbosa*.'—H. Bolus, 'On some Cape Orchids.'—C. Darwin, 'The action of Carbonate of Ammonia on the roots of certain Plants.'

New Zealand Journal of Science (May.)—F. von Mueller, 'Plurality of Cotyledons in *Persoonia*.'

Œsterr. Bot. Zeitschrift.—'Carl Schiedermayer' (portrait.)—F. Hofmann, 'On the Flora of Bosnia' (contd.)—S. S. von Müggenburg, 'Mycological Notes' (contd.)—J. Ullepitsch, 'Plants of the Dreisesselberg.'—P. G. Strobl, 'Flora of Etna' (contd.)

Quarterly Journal of Microscopical Science.—F. O. Bower, 'Germination and Embryogeny of *Gnetum Gnemon.*'—T. H. Huxley, 'On *Saprolegnia* in relation to the Salmon Disease.'

Revue Mycologique. — J. Therry & J. Thierry, 'New Species of *Mortierella*' (*M. arachnoides*, *M. Ficariæ*), (1 tab.)—J. Bresadola, 'On *Clitocybe xantophylla* and *Hygrophorus Wynniæ.*'

Scottish Naturalist.—J. Stirton, 'On the Genus *Usnea*' (many new species, including *U. comosa* (Ben Lawers and Moffat), *U. nitida* and *U. subfloridana*, both from Ben Lawers.)—J. Cameron, 'Gaelic Names of Plants' (contd.)—E. Moir, 'On the Distribution of the Native Alpine Flora in Scotland.'—W. J. Fortescue, 'New List of Flowering Plants and Ferns of Orkney.'—F. B. White, 'Preliminary List of Perthshire Plants' ("*Aira flexuosa*, L., var. *voirlichensis*, Cosmo Melvill, M.S. Spikelets with three perfect flowers. Ben Voirlich.")

LINNEAN SOCIETY OF LONDON.*

May 24, 1882.—Anniversary Meeting, Sir John Lubbock, Bart., F.R.S., President, in the chair.—Mr. H. T. Stainton, on behalf of the Audit Committee, read the Statement of Receipts and Payments for the year, and the Treasurer, Mr. Frank Crisp, followed with a detailed explanation of the various items, showing that the Society was in a very sound financial condition, for besides investments of about £4000 the balance at bankers was £649 2*s.* 5*d.* Afterwards the Secretary, Mr. B. D. Jackson, read his Annual Report. Since the last Anniversary 15 Fellows of the Society, 2 Foreign Members and 1 Associate had died, and 7 Fellows had withdrawn; while 40 new Fellows had been elected. Between purchase, exchange, and donations 383 volumes and 348 separate parts had been added to the Library. The President then delivered his Anniversary Address, commenting generally on the events of the past year, with special reference to their bearing on the Society. The meetings had been unusually well attended, exhibitions and papers read evoking interesting discussions. The publications, in number, nature and sale, were highly satisfactory. The Library had received useful additions, the late Treasurer's (Mr. Currey) bequest of rare volumes being most acceptable. Referring to the removal of the botanical collections of the British Museum to the new building at South Kensington, he congratulated the Trustees on the ample space now given for exhibition in the public gallery. The Herbarium, founded in 1824, had now increased twentyfold, and to the original Banksian and Sloane Herbaria had been added that of Shuttleworth; the American plants of Nuttall, Gardner and Miers; the Asiatic plants of Pallas,

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* [We are mainly indebted to Dr. J. Murie for the reports appearing under this heading.—Ed. Journ. Bot.]

Horsfield and Wallich; the Ferns of J. Smith, and the Mosses and Liverworts of Wilson and Hampe; besides other collections. The separation from the great Library at Bloomsbury threatened to be a serious drawback, but the Government had liberally provided funds to obviate this difficulty, and some 8000 volumes now form a good nucleus of reference to workers. The Treasury have also consented to the erection of a separate building for specimens preserved in spirit, a most necessary and desirable measure. Passing to Kew Gardens, mention was made of Miss North's presentation of 615 oil paintings, illustrative of phases of vegetation, taken by herself in the eastern and western hemispheres. The late Mr. G. C. Joad's Herbarium of European plants, the Rev. W. A. Leighton's Lichens, and Mr. H. C. Watson's Herbarium, have been recently added. The Cryptogamic collections have now been brought together and their arrangement improved. A series illustrating the diseases of plants is a desideratum. The great work, 'Genera Plantarum,' wherein Mr. Bentham and Sir J. D. Hooker had laboured for the last twenty years, was now well towards its termination. Already about 14,500 published genera had been dealt with. As a sequel there will be a new addition of Steudel's 'Nomenclator,' the funds for which have been supplied by the munificence of the late Mr. Charles Darwin, Mr. B. D. Jackson undertaking its superintendence. The obituary notices of deceased Fellows were afterwards read by the Secretary, the Society having to deplore, amongst others, the loss of Charles Darwin, Professor Rolleston, Sir C. Wyville Thomson, and their late Treasurer, Mr. Frederick Currey, who had been in office above twenty years, as also the Librarian, Mr. R. Kippist, who had been in the Society's service over fifty years. The scrutineers having examined the ballot, then reported that Mr. H. W. Bates, Professor T. S. Cobbold, Professor P. M. Duncan, Mr.. E. M. Holmes, and Sir J. D. Hooker, had been elected into the Council, in the place of Professor Allman, Rev. J. M. Crombie, W. S. Dallas, A. Grote, and Professor Lankester, who retired; and for officers Sir J. Lubbock as President, Frank Crisp as Treasurer, and B. D. Jackson and G. J. Romanes as Secretaries.

June 1.—Frank Crisp, LL.B., Treasurer, in the chair.—Mr. H. C. Burdett was elected a Fellow of the Society.—Mr. H. N. Ridley drew attention to a specimen of *Equisetum maximum*, Lam., to which reference is made at p. 246.— The Rev. G. Henslow exhibited a specimen of malformed Wallflower, in which the petals were suppressed or represented by small green scales. It had no stamens, but in their place malformed carpels, either free or coherent with the pistil, as in similar examples described by Masters and others. Mr. Henslow also drew attention to a Rhododendron, in which every blossom had an open pistil with petals and stamens growing within and at the base. A third specimen shown and commented upon was a double garden Ranunculus with a mass of foliaceous petals.—Dr. T. S. Ralph, A.L.S., exhibited specimens of growing *Vallisneria* from Sydney, Australia, and supposed to differ somewhat from the European species, *V.*

spiralis. — Mr. C. B. Clarke laid on the table dried specimens of the ferns referred to in his paper.—Dr. Marshall Ward read a paper on his 'Researches on the Life History of *Hemileia vastatrix*,' the fungus of the coffee-leaf disease. The phenomena attendant thereon shows great analogy to those of the Uredine fungi. The spores under favourable conditions, *viz.*, moisture, a due supply of oxygen, and a temperature of 75° F., usually germinate in from twelve to twenty-four hours. Complete infection or establishment of the mycelium in the intercellular passages of the leaf occurs about the third day after the formation of germinal tubes. The so-called yellow spot, or ordinary outward visible appearance of the disease, manifests itself about the fourteenth or fifteenth day, but may be delayed, its development and course being dependent on secondary causes, such as atmospheric conditions, monsoons, age of the coffee leaf, &c. By watching the progress of the spots, it has been ascertained that the spores therefrom may be continuously produced for from seven to eleven weeks, or even more. Some 150,000 spores have been estimated as present in one yellow cluster spot, and as 127 disease spots have been counted in one pair of leaves the quantity of spores thus regularly produced must be enormous. According to amount of diseased spots the sooner the leaf falls, and though young leaves arise the fruit-bearing qualities of the plant necessarily are seriously interfered with. The various sorts of coffee-plant are all liable to infection; the only possible remedy is the difficult one of destruction of the spores, which are supposed originally to have been introduced from the native jungle and rapidly spread under the favourable conditions of artificial cultivation.

June 15.—Sir John Lubbock, Bart., F.R.S., in the chair.—The following gentlemen were elected Fellows of the Society:—T. D. Gibson-Carmichael, Rev. R. Collie, Chas. A. Ferrier, W. D. Gooch, Sir J. R. Gibson-Maitland, Bart., M. Murphy, Rev. H. A. Soames, H. C. Stephens, H. G. W. Stephens, and James Turner. Mr. Dyer exhibited specimens of *Equisetum giganteum* from Brazil, which is said to have aërial stems attaining thirty feet. Mr. H. N. Ridley exhibited the monstrosity of *Carex glauca* referred to at page 246. He also exhibited a specimen of *Lolium perenne* from Hendon, in which the stamens and pistils were converted into glumes or glume-like bodies, and in most of the examples terminated by stigmatic hairs, showing the transition from glumes to carpellary leaves. —Mr. G. J. Fookes exhibited and made remarks on malformed specimens of Wallflower and *Clematis lanuginosa*, var. *alba*, the Wallflower resembling in most respects that referred to by the Rev. G. Henslow at a former meeting.—Sir John Kirk exhibited and gave information respecting specimens of the fruits, leaves and rubber of *Landolphia florida?* obtained from the Island of Pemba, north of Zanzibar; and also of bells and rubber beaters, made and used by the natives of East Central Africa.—A paper was read by Sir J. D. Hooker, "On *Dyeria*, a new genus of *Apocynaceæ* from the Malayan Archipelago." Its nearest affinity is no doubt with *Alstonia*, from which it differs conspicuously in the sessile stigmas—

a character perhaps unique in the order—and in the singular pistil. It further differs from that genus in the extraordinary minuteness of the flowers, which are scarcely one-eighth of an inch in length, whilst the ovules have a diameter of 1–200th of an inch. These latter organs are succeeded by fruits of immensely large dimensions for the order.—Mr. W. T. T. Dyer read a paper "On the Caoutchouc-yielding *Apocynaceæ* of Malaya and Tropical Africa." After giving a general sketch of the structural and physiological conditions of the occurrence of caoutchouc in plants, the author pointed out that the plants which appeared to yield it in commercial quantity in three widely separated regions all belonged to one tribe of *Apocynaceæ*, the *Carisseæ*. In the East Indies the "Gutta Soosoo" of Borneo was the produce of a new species of *Willughbeia* (*W. Burbidgei*). Many other species of this and allied genera also seemed to produce caoutchouc in quantity worth collecting. In Central Africa *Landolphia*, which was closely allied to *Willughbeia* but differed in possessing terminal instead of axillary flowers, was the most important source. On the East Coast caoutchouc was yielded by *L. owariensis* and. *L. florida*, the latter a very ornamental plant. As the rubber exuded from the cut stems it was plastered on the breast and arms, and the thick layer when peeled off and cut up into squares was called "thimble rubber." On the west coast the most important species was *L. Kirkii*, the rubber of which could be wound off into balls on small rolls from the cut stems, like silk from a cocoon; this species was called "Matere." *L. florida* also occurred, and was called "M'bungu"; its rubber was worked up into balls, but was inferior in value. The rubber of *L. Petersiania* was of little importance. In South America *Hancornia speciosa* yielded what was called "illangabina" rubber.—A series of dried flowers, fruits, and specimens of rubber, &c., were exhibited, in illustration of the two foregoing papers.—Under the title of "List of Fungi from Brisbane, Queensland, with Descriptions of New Species, by the Rev. M. J. Berkeley and Mr. C. E. Broome," a paper was read of considerable importance. It contained information regarding collections of fungi received since 1878. The examples of *Phalloidei* are most interesting, and the occurrence of the Himalayan *Mitromyces viridis* is curious; there are other species worthy of consideration from the standpoint of botanical geography.—A paper was read "On a Collection of Ferns made by the Rev. R. B. Comins in the Solomon Islands," by Mr. J. G. Baker. The series contained upwards of sixty species and varieties, a few being new and of special interest, while others were representative of widely-spread Polynesian and Tropical Asiatic types.—The last botanical paper read was "On two new and one wrongly-referred *Cyrtandreæ*," by Mr. H. O. Forbes. The plants in question are *Boea Treubii* (which possibly may be representative of a new genus), *Didymocarpus Schefferi*, also from Borneo, and *D. minahassæ*, evidently in error put under *Boea* by Mr. C. B. Clarke.

Original Articles.

SPICILEGIA FLORÆ SINENSIS: DIAGNOSES OF NEW, AND HABITATS OF RARE OR HITHERTO UNRECORDED, CHINESE PLANTS.

By H. F. Hance, Ph.D., Memb. Acad. Nat. Cur., &c., &c.

VII.

1. *Delphinium* (*Delphinastrum*) *dasyanthum*, Kar. & Kir.?—Ad lacum Ko-ko-nor, a. 1881, leg. W. Mesny. The specimen is indifferent, but I think referable to this species, which is a near ally of the North American *D. Menziesii*, DC., and remarkable for its pitch-black petals. Mr. Mesny's plant has the spur double as long as the sepals, not shorter. The great lake of Ko-ko-nor, situated in the very centre of the Chinese Empire, is said to be from 200 to 230 miles in circumference. (Przewalsky, Mongolia, ii., 139.) It is no less than 10,500 feet above the sea-level.

2. *Pæonia* (*Pæon*) *albiflora*, Pall.—Circa Hami, Turkestaniæ chinensis, invenit cl. W. Mesny, m. Maio 1881. The typical form, with glabrous ovaries. Flowers rose-coloured, as they are also marked on the ticket of a Jehol specimen of the variety *trichocarpa*, Bge., given me by the Abbé David. According to Andree's very beautiful "Hand-atlas," Hami is 960 mètres (3150 feet) above the sea-level. It is interesting to note that Mr. Mesny gives for this plant, in the remote region where he found it, the name 'Mau-tan-hwa,' the same by which *P. Moutan*, Linn. is known at Canton.

3. Berberis (*Euberberis*) stenophylla, sp. nov. — Frutescens ramulis albidis angulatis striato-sulcatis, spinis gracilibus trifidis 6–13 lin. longis, foliis 5–8-fasciculatis coriaceis lineari-oblongis mucronatis utrinque opacis costa subtus prominula ad utrumque latus spinulis 4–10 brevibus subadpressis denticulatis brevissime petiolatis 1–2 poll. longis 3–5½ lin. latis, pedicellis 6–8-aggregatis 3–4 lin. longis, baccis (adhuc immaturis) ellipsoideis leviter pruinosis pedicello circ. æquilongis stylo crasso brevi stigmateque discoideo styli longitudinem diametro adæquante coronatis.

Ad Chung-king, prov. Sz-ch'uan, æstate 1881, legit am. E. H. Parker. (Herb. propr. n. 21774.)

Closely allied to *B. Wallichiana*, DC.

4. *Thlaspi* (*Nomisma*) *arvense*, Linn.—In derelictis juxta Wu-hu, prov. An-hwei, m. Maio 1881, rarius invenit T. L. Bullock. The only Chinese specimen in my herbarium.

5. *Polygala sibirica*, Linn. — Juxta Wu-hu, prov. An-hwei, Maio 1881, leg. Bullock.

6. *Stellaria* (*Eustellaria, Larbræ*) *chinensis*, Regel.—In prov. Anhwei, prope Wu-hu, Maio 1881, leg. am. T. L. Bullock. This interesting species had only been gathered in the extreme north of China; and it would appear that the only specimens in Europe are in Fischer's herbarium at St. Petersburg.

7. *Myricaria alopecuroides*, Schrenk.—Juxta lacum Ko-ko-nor, leg. W. Mesny, a. 1881.

8. *Triumfetta* (*Lappula*) *procumbens*, Forst.—Ad Lincoln Island, inss. "Paracels" dictarum, maris austro-chinensis, m. Aprili 1882, leg. Dr. Gaehde, medicus classiarius imp. germ.

9. *Ixonanthes chinensis*, Champ.—In silvis circa cœnobium buddhicum Fi-loi-tsz, juxta fl. North River, prov. Cantonensis d. 2. Oct. 1881, leg. rev. B. C. Henry. This plant, originally described from Hong Kong specimens, was accidentally overlooked by Mr. Bentham in the 'Flora Hongkongensis,' as well as by myself in the Supplement. Mr. Ford was the first to rediscover it, after it had been searched for in vain in the island for about thirty years. The fruit is considerably larger than in *I. icosandra*, Jack (Griffith! n. 784/1), or *I. cuneata*, Miq. (Sumatra, Teijsmann!), and one-third shorter than the Phu-kok (Gulf of Siam) specimen of Pierre's, which I have referred in this journal to *I. reticulata*, Jack, besides being more ovoid and sharp, rather than ellipsoid. The oblique nucleus of the seed is 4–4½ lines long, and crowned with a wing 5–6 lines in length. I have not seen the flowers.

10. *Zygophyllum Fabago*, Linn.—In Ko-ko-nor, a. 1881, leg. W. Mesny.

11. *Sarcozygium Xanthoxylum*, Bge.—Circa Hami, Turkestaniæ chinensis, m. Maio 1881, coll. W. Mesny. There is surely no reason for keeping this apart from *Zygophyllum*, which to me does not seem divisible into well-marked sections. Baillon (Hist. pl. iv. 417) has, with proper judgment, reduced it.

12. *Peganum Harmala*, Linn.—Circa urbem Hami, Turkestaniæ chinensis, Maio 1881, leg. W. Mesny.

13. LIMONIA ? TRICHOCARPA, sp. nov.—Frutescens, ramulis cum spinis rectis pollicaribus glaberrimis, foliis 3–foliolatis foliolis membranaceis obovatis obtusissimis margine crispulis reticulato-venosis terminali basi subito angustato 1½-pollicari lateralibus triente brevioribus præter costam supra pubescentem glaberrimis petiolo alato sensim leviter ampliato foliolo terminali æquilongo supra secus medium pubescente, fructibus axillaribus solitariis brevissime pedunculatis sphæricis diametro pollicari pilis brevibus cinereis dense intertextis hirtis.

Ad Chung-King, prov. Sz-ch'uan, æstate 1881, legit E. H. Parker. (Herb. propr. n. 21872.)

The very scanty specimen sent admits of no fuller character, but it seems to be a true *Limonia*.

14. VITIS (*Euvitis, Ampelos*) ADSTRICTA, sp. nov.—Scandens, ramulis inflorescentiæ rachi foliisque subtus tomento denso floccoso cano v. pallide fulvido vestitis, stipulis lanceolatis scariosis tomentosis, foliis ambitu triangulato-ovatis basi cordatis palmatilobis

lobis ob sinuum latitudinenem basi constrictis basalibus iterum bimediis terminalique tri-lobis lobulis nunc dentatis supra pilis brevibus septatis crispulis consitis 3½-poll. longis petiolo 1½-pollicari, cirrhis versus apices ramulorum oppositifoliis bifidis, paniculis folio oppositis eique æquilongis, floribus 5-meris glabris, calyce satis conspicuo margine integro undulato, petalis calyptratim secedentibus, disco cupulato, stylo brevi conico stigmate simplici.

Juxta oppidum Wu-hu, prov. An-hwei, m. Maio 1881, leg. T. L. Bullock. (Herb. propr. n. 21978.)

Allied to *V. bryoniifolia*, Bge., but is, I believe, quite distinct.

15. *Rhus vernicifera*, DC.—In prov. Sz-ch'uan, a. 1881, fructiferum leg. E. H. Parker. The specimen appears identical with the Japanese tree. The Chinese name is 'Che-shú,' and they recognise it as the true 'Varnish-tree.'

16. *Lotus corniculatus*, Linn.—In prov. Sz-ch'uan leg. cl. E. H. Parker, a. 1881. I do not think this had been previously gathered in China, though it occurs both in Nipal and Japan.

17. MILLETTIA (*Otosema*) SERICOSEMA, sp. nov.—Frutescens, ramulis teretibus ferrugineo-tomentosis, foliolis 5 brevissimo petiolatis lanceolatis basi obtusis apice acutis supra glaberrimis opacis subtiliter reticulatis subtus dense ferrugineo-tomentosis costa nervisque primariis elevatis 2–3½ poll. longis 7–11 lin. latis, stipulis stipellis bracteisque setaceis, paniculæ densæ fulvo-velutinæ ramis erectiusculis, floribus confertissimis brevissime pedicellatis 6–7 lin. longis purpureis, calycis fulvo-tomentosi dentibus lanceolatis supremo lateralibusque tubo parum brevioribus infimo ei æquilongo, vexillo ovali apice emarginato basi utrinque auriculis duabus inflexis aucto extus densissime cinerascenti-sericeo cum alis carina incurva obtusa duplo brevioribis tenuiter striato-venoso, staminibus ad medium usque monadelphis, ovario fulvo-pannoso, stylo glaberrimo.

In prov. Sz-ch'uan, a. 1881, leg. E. H. Parker. (Herb. prop. n. 21961.)

A well-marked species, the first of the section, I believe, yet found in China.

18. *Sphærophysa salsula*, D.C.—Ad lacum Ko-ko-nor, Martio, necnon copiose in campis circa oppidum Hami, Turkestaniæ chinensis, Maio 1881, invenit W. Mesny. Mr. Mesny notes that the flowers are dark purple.

19. GLYCYRRHIZA PAUCIFOLIOLATA, sp. nov.—Ramis angulatis albidis tenuissime glandulosis et furfuraceis, foliis 1–2 jugis cum impari foliolis ellipticis v. elliptico-oblongis obtusis v. emarginatis glabris utrinque tenuiter granuloso-glandulosis, racemis laxis folio circiter æquilongis, floribus 4 lin. longis, calycis breviter sparsim hirtelli granuloso-glandulosi laciniis lanceolatis tubo vix brevioribus, vexillo albido, alis carinaque apice violaceis, legumine oblongo breviter tomentello granuloso-glanduloso circiter 7-spermo.

Ad lacum Ko-ko-nor, a. 1881, leg. cl. W. Mesny. (Herb. propr. n. 22033.)

This seems altogether different from any species yet described.

20. *Vicia Cracca*, Linn.—In prov. Sz-ch'uan, a. 1881, coll.

E. H. Parker. Agrees well with the European plant. Occurs in Siberia, Manchuria, and Turkestan, but has not been gathered anywhere in British India.

21. Rubus (*Malachobatus, elongati*) ochlanthus, sp. nov.—Ramulis teretibus cinerascenti-tomentosis aculeis brevibus recurvis præditis, foliis a basi cordata elongato-ovatis acuminatis mucronato-dentatis et utrinque 2–4-angulato-lobulatis supra opacis costa nervisque flaventi-hirsutis parenchymate sparsim hirtellis et albido-lepidotis subtus pallidioribus opacis præter nervos albido-hirsutos glaberrimis venulis creberrimis parenchymate saturatioribus pictis 3½ poll. longis basi 2-poll. latis petiolo subpollicari tomentoso supra sulcata aculeato, stipulis setaceis longe sed parce fimbriatis hirsutis, paniculæ elongatæ pyramidalis efoliatæ cinerascenti-tomentosæ rachi flexuosa ramis divaricatis superioribus ad 20–30-floris mediis circ. 10-floris summis 1–2-floris, bracteis bracteolisque lineari-setaceis, calycis pedicello æquilongi cinereo-tomentelli ad medium divisi lobis ovatis setaceo-acuminatis interioribus uno v. utroque latere (secundum situm in symptyxi) late albo-tomentoso-marginatis intus sericeis 2 lin. longis, petalis unguiculatis suborbiculatis lobos calycinos adæquantibus albis 2 lin. longis, staminibus calyce paulo brevioribus, receptaculo piloso, ovariis 15–20 lageniformibus tenuiter sericeis stylo 4-plo brevioribus.

Ad pagum Sai-ngau, secus fl. Lien-chau, prov. Cantonensis, 210 mill pass. ab urbe, d. 5, Oct. 1881, leg. rev. B. C. Henry. (Herb. propr. n. 22021.)

Closely allied to *R. paniculatus*, Sm.; but entirely distinct by the want of coloured indumentum, the much denser and more copious-flowered infloresence, and the smaller flowers.

22. Rubus (*Malachobatus, elongati*) Parkeri, sp. nov.—Ramulis compressiusculis molliter cinerascenti-tomentosis aculeis recurvis munitis, foliis e basi cordata late lanceolatis acutis serratis et utrinque 3–4 sinuato-lobulatis lobulis præter basales inconspicuis supra opacis sparsim hirtellis costa tomentosa subtus vix discoloribus molliter tomentosis venarum rete elevato 6 poll. longis basi 2½ poll. latis petiolo tomentoso inermi 3–4 lineali, stipulis setaceis parce fimbriatis tomentosis, paniculæ elongatæ laxæ efoliatæ molliter cinerascenti-tomentosæ glandulis stipitatis 1½ lin. longis dense obsitæ ramis erecto-patentibus 3–5-floris, bracteis fimbriato-partitis, calycis cinereo-tomentosi ultra medium fissi lobis lanceolatis acuminatis 6 lin. longis dorso margineque glandulis stipitatis conspicue ornatis intus tomentellis, petalis? (delapsis), staminibus laciinis calycinis subtriplo brevioribus, receptaculo cinereo-villoso, drupeolis 7–10 stylo iis duplo longiore coronatis putamine profunde reticulatim exsculpto.

In prov. Sz-ch'uan, a. 1881, leg. E. H. Parker. (Herb. propr. n. 21896.)

A very distinct species, approaching to some extent the group *Oligococci*, owing to its few drupelets, and to the absence of any tawny colouring on the under surface of the leaves. The stipitately glandular vestiture of the inflorescence is very much like that of *R. phœnicolasius*, Maxim. The leaves resemble in form

that represented in fig. 50 of the phototypic plate attached to Dr. Kuntze's 'Methodik der Speciesbeschreibung und Rubus,' as belonging to a form of *R. paniculatus*, Sm.

23. *Potentilla Salessovii*, Steph.—Juxta lacum Ko-ko-nor, a. 1881, leg. W. Mesny. The petals appear certainly white, not rose-coloured as described by Lehmann.

24. *Potentilla fruticosa*, Linn.—Ad lacum Ko-ko-nor, a. 1881, leg. W. Mesny. Specimen very much reduced, much more so than Tibetan and Songarian ones, belonging to the form which has been needlessly distinguished as *ochreata*.

25 *Potentilla multifida*, Linn.—Ad lacum Ko-ko-nor, a. 1881, leg. W. Mesny.

26. *Saxifraga* (*Hydatica*) *cortusifolia*, Sieb. & Zucc.—Juxta oppidum Wu-hu, prov. An-Hwei, m. Maio 1881, coll. Bullock. These are the only native Chinese specimens I have seen.

27. *Saxifraga* (*Hirculis*) *flagellaris*, Willd.—Ad lacum Ko-ko-nor, a. 1881, leg. Mesny.

28. *Parnassia* (*Nectarotrilobos*) *ovata*, Led.—Ad lacum Ko-ko-nor, a. 1881, coll. W. Mesny.

29. *Lythrum Salicaria*, Linn. β. *vulgare*, Led.—Circa Chin-kiang, prov. Kiang-su, Aug. 1880, leg. T. L. Bullock.

30. *Pemphis acidula*, Forst.—Ad Lincoln Island, inss. Paracels, maris austro-chinensis, m, Aprili 1882, leg. Dr. Gaehde, medicus navalis imp. German.

31. VIBURNUM (*Tinus*, *Megalotinus*, *fœtida*) SETIGERUM, sp. nov.—Frutescens, 4–5-pedale, ramis subteretibus cortice striato-sulcato, ramulis subcompressis cortice pallidiore, foliis ovatis integerrimis acuminatis penninerviis supra opacis glaberrimis costa nervisque impressis subtus secus costam nervosque elevatos setis pallidis 1–1½ lin. longis vestitis squamulisque punctiformibus albidis sub lente tantum conspicuis confertissime obsitis venulis transversis utrinque vix conspicuis, gemmis intus dense pallide setosis, corymbis axillaribus et terminalibus umbellatis pedunculatis, floribus 2 lin. diametro, calycis glaberrimi dentibus breviter triangulatis, corollæ albæ lobis ovatis intus tomentellis staminibus æquilongis, drupis ellipsoideis compressis acutis 3–4 lin. longis putamine exsulcato, seminis subplani testa rugosa albumine æquabili.

In monte Ko-lo-shan, ab æstivo occasu oppidi Chung-king, prov. Sz-ch'uan, alt. 2000 ped., exeunte Julio 1880, leg. W. Mesny. (Herb. propr. n. 21739.)

Allied to *V. sempervirens*, C. Koch, and *V. punctatum*, Ham. I have followed out the well-devised arrangement lately proposed by Maximowicz (Mél. biol. Acad. St. Pétersb. x. 644 sqq). According to that of Oersted (Vidensk. Meddel. naturhist. Foren. Kjöbenh. 1860, 296), the plant stands in the subgenus *Euviburnum*, section i. § *Sloaneifolia*.

(To be continued).

A CONTRIBUTION TOWARDS A FLORA OF THE TEIGN BASIN, S. DEVON.

By the Rev. W. Moyle Rogers, F.L.S.

(Concluded from p. 243.)

As since I began writing this paper I have moved my home from the banks of the Teign to those of the Tamar, and so can hardly hope to make any further contribution towards a Flora of the Teign Basin, it may be desirable that I should here add to the foregoing notes on the less common plants the two lists following :—

I. Roses of the district, as observed by me (1876–1881).

Rosa tomentosa, Sm. (aggregate). — Generally distributed, and usually rather common. Of the clothy-leaved forms in the district, *R. cuspidatoides*, Crép., appears to me the best marked and most constant in character. It is rather frequent in the parishes of Christow, Ashton, and Trusham. Bushes by the Teign near Chagford (frequent), by the roadside between Moreton and North Bovey, and by the Bovey near Bovey Tracey, appear to be all rather glandular forms of *R. subglobosa*, Sm. But most of the downy thick-leaved plants of the district may best be ranged under typical *R. tomentosa*, Sm., as described in Baker's 'Monograph,' though frequently more glandular than that. Of the thin-leaved forms *R. sylvestris*, Woods, occurs in good quantity at the bottom of Teign Lane, Trusham, and in fields to the east of Chudleigh; and very well-marked *R. scabriuscula*, Sm., is abundant on Black Lea Down, Trusham, and also occurs occasionally in the parishes of Ashton, Hennock, and Chudleigh.

R. rubiginosa, L.—The only place not actually in or close to a garden where I have seen this is the hedge of a field between Chudleigh Bridge and Chudleigh Knighton,

R. micrantha, Sm.—Rather common on Bovey Heathfield, on Knighton Heath, in Hennock, and in all the parishes on the western slope of Haldon; Ilsington, *Briggs*. On Haldon and on Black Lea I have met with some small bushes agreeing with Baker's description of *R. hystrix*, Leman, except in having a few hairs on the leaves beneath. I have seen no naked-peduncled form. More frequent in rough bushy ground and among furze than in lanes and fields.

R. canina, L., a. *lutetiana*, Leman.—Common.

c. *sphærica*, Gren.—One large bush near the river by Teign Bridge.

e. *dumalis*, Bechst.—Very common everywhere. The small white-flowered form referred to in Fl. Plym. (p. 137) is frequent. In the valley between Chudleigh and Crocombe Bridges are some bushes with the foliage of *dumalis*, and globose fruit with densely villose styles, specimens of which M. Déséglise has named *R. eriostyla*, Des. & Rip.

f. *biserrata*, Mérat.—On both sides of the river between Sparrow and Crocombe Bridges; frequent. Quite common in Trusham, and certainly not uncommon in the parishes of Ashton, Chudleigh, and part of Exminster. A very beautiful and well-marked rose, with unusually narrow petals of a delicate pink hue and bright orange-coloured stamens.

g. *urbica*, Leman. — Generally distributed, and often more abundant even than *dumalis*. Usually the first rose in flower by several days. Under this most British botanists would place *R. semiglabra*, Rip., which I have found in several spots in Ashton and Trusham.

h. *frondosa*, Steven.—Between Moreton and North Bovey; near Dunsford Bridge; Ashton; Trusham; part of Exminster; near Chudleigh Knighton. Rare.

Var. *obtusifolia*, Desv.—Ashton; Trusham; Chudleigh. Rather frequent.

n. *andegavensis*, Bast.—Ashton, in one or two spots; between Chudleigh and top of Haldon. Very rare.

o. *verticillacantha*, Mérat. (1) type.—Field near Moreton; Nitton Cleave; Ashton, in two places. Rare. (2) *aspernata*, Nob.—Canonteign Down, two or three immense bushes amongst the furze and brambles; frequent in all the parishes on the western slope of Haldon, especially in Trusham. (3) *latebrosa*, Déségl.—Ashton, in two places near Bramble Farm; Trusham, on hedge of Sotridge Orchard.

Var. *Kosinciana*, Besser.—Trusham, in Teign Lane, and in the Exeter Road.

t. *Reuteri*, Godet.—Between Bovey Tracey and Bovey Heathfield.

R. leucochroa, Desv.—Very common, as it appears to be throughout the county and in East Cornwall. Just intermediate between *R. canina* and *R. systyla*.

R. stylosa, Desv., a. *systyla*, Bast.—Very common.

b. *Desvauxii*, Baker.—By the river at Trusham, 1877. The only other place in the county where I have seen this is by the roadside between Dawlish and Teignmouth.

Under the aggregate *R. stylosa*, Desv., must certainly come a well-marked rose with rather strongly arching stem, cup-shaped pure white flowers, and glabrous foliage, which is rather common on the western slope of Haldon, and extends to Chudleigh Knighton, but has not been met with elsewhere by either Mr. Briggs or me.*

R. arvensis, Huds.—Very common.

b. *bibracteata*, Bast.—Fairly common.

I am under great obligations to M. Déséglise, as well as to Mr. Baker and Mr. Briggs, for much invaluable help most kindly rendered to me in my efforts to name these roses correctly.

II. The common species of the district not included in the preceding notes. The *very* common plants will be distinguished from the others by being printed in italics. The nomenclature is that of the 'London Catalogue,' edit. 7:—

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* Since this was written, Mr. Briggs has sent me a specimen of this rose gathered by him near Torquay this summer.

Anemone nemorosa.
Ranunculus Flammula.
R. acris.
R. repens.
R. bulbosus.
R. Ficaria.
Papaver Rhæas.
Fumaria officinalis.
Sinapis arvensis.
Sisymbrium officinale.
S. Alliaria.
Cardamine pratensis.
C. hirsuta.
C. sylvatica.
Arabis thaliana.
Barbarea vulgaris.
Nasturtium officinale.
Draba verna (usually b. brachycarpa).
Capsella Bursa-pastoris.
Senebiera Coronopus.
Reseda luteola.
Viola tricolor.
Drosera rotundifolia.
Lychnis vespertina.
L. diurna.
L. Flos-cuculi.
L. Githago.
Cerastium glomeratum.
C. triviale.
Stellaria media.
S. Holostea.
S. graminea.
S. uliginosa.
Arenaria trinervia.
A. serpyllifolia (usually b. *leptoclados*).
Sagina apetala.
S. procumbens.
Spergula arvensis.
Montia fontana.
Hypericum perforatum.
H. tetrapterum.
H. pulchrum.
Linum catharticum.
Geranium molle.
G. dissectum.
G. Robertianum.
Oxalis Acetosella.
Ilex Aquifolium.
Euonymus europæus.
Ulex europæus.
Sarothamnus scoparius.
Ononis arvensis.
Medicago lupulina.
Trifolium pratense.
T. repens.
T. procumbens.
T. minus.
Lotus corniculatus.
L. major.
Ornithopus perpusillus.
Vicia hirsuta.
V. tetrasperma.
V. Cracca.
V. sepium.
V. angustifolia (especially b. *Robartii*).
Lathyrus pratensis.
Prunus spinosa.
Spiræa Ulmaria.
Agrimonia Eupatoria.
Alchemilla arvensis.
Potentilla Fragariastrum.
P. Tormentilla.
P. reptans.
Fragaria vesca.
Geum urbanum.
Cratægus Oxyacantha.
Pyrus Aucuparia.
Epilobium hirsutum.
E. parviflorum.
E. montanum.
Circæa lutetiana.
Callitriche platycarpa.
Sedum anglicum.
S. acre.
Cotyledon umbilicus.
Hydrocotyle vulgaris.
Sanicula europæa.
Helosciadium nodiflorum.
Bunium flexuosum.
Pimpinella Saxifraga.
Œnanthe crocata.
Æthusa Cynapium.
Angelica sylvestris.
Heracleum Sphondylium.
Daucus Carota.
Torilis Anthriscus.
Scandix Pecten-Veneris.
Hedera Helix.
Sambucus nigra.

Lonicera Periclymenum.
Galium verum.
G. Mollugo.
G. saxatile.
G. Aparine.
Sherardia arvensis.
Valeriana officinalis.
Valerianella olitoria.
Dipsacus sylvestris.
Scabiosa succisa.
S. arvensis.
Carduus nutans.
C. lancolatus.
C. palustris.
C. arvensis.
Centaurea Scabiosa.
Chrysanthemum Leucanthemnm
Matricaria inodora.
Achillea Millefolium.
Filago germanica.
Gnaphalium uliginosum.
Senecio vulgaris.
S. Jacobæa.
S. aquaticus.
Inula dysenterica.
Bellis perennis.
Solidago Virga-aurea.
Tussilago Farfara.
Eupatorium cannabinum.
Lapsana communis.
Hypochæris radicata.
Leontodon hirtus.
L. autumnalis.
Taraxacum officinale.
Sonchus oleraceus.
S. asper.
S. arvensis.
Crepis virens.
Hieracium Pilosella.
Jasione montana.
Erica Tetralix.
E. cinerea.
Calluna vulgaris.
Fraxinus excelsior.
Ligustrum vulgare.
Erythræa Centaurium.
Convolvulus arvensis.
C. sepium.
Solanum Dulcamara.
Verbascum Thapsus.
Scrophularia Balbisii.
S. nodosa.
Digitalis purpurea.
Linaria Cymbalaria.
L. vulgaris.
Veronica hederifolia.
V. polita.
V. agrestis.
V. Buxbaumii.
V. arvensis.
V. serpyllifolia.
V. officinalis.
V. Chamædrys.
V. Beccabunga.
Rhinanthus Christa-galli.
Verbena officinalis.
Lycopus europæus.
Mentha hirsuta.
M. arvensis.
Calamintha Clinopodium.
C. menthifolia.
Nepeta Glechoma.
Prunella vulgaris.
Ballota nigra.
Stachys Betonica.
S. palustris.
S. sylvatica.
S. arvensis.
Galeopsis Tetrahit.
Lamium amplexicaule.
L. purpureum.
Ajuga reptans.
Teucrium Scorodonia.
Myosotis arvensis.
Primula vulgaris.
Lysimachia nemorum.
Anagallis arvensis.
A. tenella.
Plantago major.
P. lanceolata.
Chenopodium album.
Atriplex angustifolia.
Rumex conglomeratus.
R. nemorosus.
R. obtusifolius.
R. crispus.
R. Acetosa.
R. Acetosella.
Polygonum Convolvulus.
P. aviculare.
P. Hydropiper.
P. Persicaria.

Euphorbia Helioscopia.
E. amygdaloides.
E. Peplus.
Mercurialis perennis.
Urtica dioica.
Ulmus suberosa.
U. montana.
Fagus sylvatica.
Corylus Avellana.
Alnus glutinosa.
Arum maculatum.
Lemna minor.
Alisma Plantago.
Orchis mascula.
O. maculata.
Tamus communis.
Scilla nutans.
Allium ursinum.
Luzula campestris.
L. multiflora.
Juncus conglomeratus.
J. effusus.
J. glaucus.
J. acutiflorus.
J. lamprocarpus.
J. bufonius.
Anthoxanthum odoratum.
Digraphis arundinacea.
Alopecurus geniculatus.
A. pratensis.
Phleum pratense.
Agrostis alba.
A. vulgaris.
Aira cæspitosa.
A. caryophyllea.
A. præcox.
Avena elatior and b. *nodosum.*
Holcus mollis.
H. lanatus.
Triodia decumbens.
Molinia cærulea.
Melica uniflora.
Glyceria fluitans.
Poa annua.
P. pratensis.
P. trivialis.
Briza media.
Cynosurus cristatus.
Dactylis glomerata.
Festuca sciuroides.
F. ovina.
F. duriuscula.
F. elatior.
F. pratensis.
Bromus sterilis.
B. mollis.
Brachypodium sylvaticum.
Triticum repens.
Lolium perenne.
Pteris aquilina.
Asplenium Adiantum-nigrum.
A. Trichomanes.
Athyrium Filix-fœmina.
Scolopendrium vulgare.
Nephrodium Filix-mas.
N. dilatatum.
Polypodium vulgare.
Equisetum arvense.

CONTRIBUTIONS TO THE FLORA OF CENTRAL MADAGASCAR.

By J. G. Baker, F.R.S.

(Concluded from p. 245.)

Loranthus (*Dendropthoe*) Baroni, n. sp.—A shrub 4–5 feet long, glabrous in all its parts, with pale woody terete lenticellate branchlets. Leaves opposite, distinctly petioled, oblong, acute, 2–3 in. long, moderately firm in texture, green on both surfaces, distinctly penninerved, with 5–6-jugate ascending perceptible main ribs. Flowers 5–6 together in sessile umbels mainly from the nodes of the branches below their leafy portion; pedicels nearly as long as the calyx. Calyx ⅛ in. long, with an oblong tube, minute quadrate teeth and a small oblique deltoid bracteole at the base. Corolla cylindrical, bright red, ¼ in. long, slit down one side below the middle; segments lanceolate, ¼ in. long. Anthers lanceolate, subsessile at the throat of the corolla-tube. Style as long as the corolla. Berry oblong, ¼–⅓ in. long.—A common parasite in the woods of the Betsileo country, *Baron* 20! and Dr. Parker sends what is probably a variety of the same species grown in a more exposed situation, with thicker leaves with less distinct veining, under the native name of *Hazo-miavona.*

TAMBOURISSA PARVIFOLIA, n. sp.—A tree with slender glabrous branchlets. Leaves opposite, distinctly petioled, oblong, obtuse, entire, subcoriaceous, deltoid or rather rounded at the base, green and glabrous on both surfaces, 1-1½ in. long, the 5–6-jugate fine almost patent main veins connected by arches within the margin. Male flowers 4–8 in racemes or umbels on short lateral peduncles; pedicels curved, ¼–⅓ in. long, with a small persistent deltoid bract subtending them at the base. Male perianth suborbicular, brownish, coriaceous, ⅙ in. diam., permanently closed, without any aperture at the apex, filled up with the oblong sessile or nearly sessile anthers, those of the opposite sides touching at their tips. Female perianth and fruit not seen.—Forests of Central Madagascar, *Dr. Parker!* Native name *Ambora* and *Amboravato.*

URERA AMBERANA, n. sp.—A shrub with ultimate branchlets as stout as a pencil. Petiole 2–3 in. long; stipules deciduous; blade cordate-ovate-cuspidate, 5–6 in. long, deeply serrated, thin in texture, green with a thin covering of short bristly hairs on both surfaces. Flowers monoicous, in clusters on the slender branches of oblong bipinnate panicles which with their peduncles are about as long as the leaves. Male flowers only seen. Male perianth depresso-globose, greenish, 1 lin. diam., with 5 deltoid valvate teeth, a short tube and 5 oblong stamens with very short filaments surrounding a rudimentary ovary. Round villages in the Betsileo country, *Baron* 321! Native name *Amberana.*

PIPTURUS INTEGRIFOLIUS, n. sp.—A shrub 6–8 feet high, the slender branchlets clothed with white tomentum. Leaves alternate, distinctly petioled; stipules ovate, scariose, brown, deciduous; blade ovate, acute, entire, 1–1½ in. long, green and shortly pilose on the upper surface, clothed with white tomentum beneath, with 3–4-jugate erecto-patent main veins. Flowers in dense sessile globose monoicous clusters in the axils of the leaves. Male bud orbicular, pilose. Male perianth with 5 deltoid segments and 5 inflexed stamens with filaments as long as the orbicular anthers surrounding the rudimentary ovary. Pericarp crustaceous, adhering to the entire ampullæform pilose perianth of the female flower.—Shrubby places in West Betsileo, flowering in December, *Baron* 103! Native name, *Fotsimivadika* (= white on the other side.)

PILEA HYPNOPHILA, n. sp.—An annual herb, with erect glabrous stems under a foot long. Leaves distant, opposite, the uppermost pair with a short, the lower with a long (½–¾ in.) petiole; stipules semiorbicular, adnate to the petiole, ⅙ in. long; blade ovate, membranous, acute, 1–1½ in. long, deeply serrated above the entire deltoid base, green and slightly bristly on both surfaces. Flowers in small (monoicous) sessile clusters in the axils of the upper leaves. Female perianth with 3 unequal bristly segments, the largest oblong, obtuse, as long as the achene. Achene ovoid, flattened, slightly oblique, pale brown, ¼ in. long.—Mossy banks in woods of East Betsileo, flowering in December and January, *Baron* 117! Near the Tropical African *P. tetraphylla*, Blume.

Croton (*Eucroton*) myriaster, n. sp.—A shrub, with slender terete woody branchlets, rugose, with pale brown tomentum. Leaves alternate; stipules setaceous, deciduous; petiole ½–¾ in.; blade ovate or oblong-lanceolate, acute, 2–3 in. long, moderately firm in texture, green, with very copious minute tufts of stellate hairs above, drab and softly pilose beneath, copiously penninerved, furnished with a pair of small sessile blackish patellæform glands at the base. Flowers in a short simple erect terminal raceme, with a densely tomentose axis, many males, about 2 females; bracts minute, linear or lanceolate. Male calyx campanulate, ⅙ in. diam., with 5 deltoid lobes reaching down nearly to the base, densely brown-tomentose on the outside, 5 small petals and about 12 stamens, with filaments twice as long as the anthers. Female flowers with 5 tomentose brown sepals ⅛ in. long, no petals, and a densely brown-hispid ovary ⅙ in. diam., with several branches to each of the styles.—Forests of East Betsileo, *Baron* 223! Native name *Mongipasina*. A near ally of *C. tiliæfolius*, Lam., and *C. lacciferus*, L.

Croton (*Eucroton*) platanifolius, n. sp.—A shrub, with slender woody terete branchlets, rough towards the top, with pale brown tomentum. Leaves alternate; petiole 2–3 in. long; blade cordate-orbicular, with a pair of stalked glands at the base, 4–6 in. long and broad, with 3–5 shallow deltoid lobes, moderately firm in texture, green and obscurely pilose or minute spots on the upper surface, densely coated with soft light drab pubescence beneath. Flowers in shortly-peduncled racemes ½ ft. long, several from a node, very numerous male and only 1–2 females; pedicels erecto-patent, finally longer than the flowers; bracts small, subulate, tomentose, deciduous. Male flower ¼–⅓ in. diam. when expanded, with 5 deltoid sepals, densely clothed with brown tomentum outside, 5 whitish obovate pilose petals of the same length, and about 20 stamens. Female flower with 5 spreading coriaceous sepals ⅛ in. long, no petals, a globose densely brown-hispid ovary ⅙ in. diam., and copiously-branched black spirally-twisted stigmas. —Edges of woods in East Betsileo, *Baron* 262! An ally of the last species.

Aloe Sahundra, Bojer, Hort. Maur. 345?—Leaves not seen. Flowers in a dense simple spike 6–8 in. long, 1¼ in. diam. when expanded, on a peduncle longer than itself, with several empty bracts. Bracts orbicular-cuspidate, ⅓–½ in. long and broad, with 8–10 close green ribs in the brick-red centre, aud a broad membranous border. Perianth sessile, yellow, polyphyllous, ½–⅝ in. long; segments oblanceolate, obtuse, with about 3 distinct brown ribs down the centre. Stamens as long as the perianth; anthers minute, ovate, reddish yellow. Style finally exserted $\frac{1}{4}$–$\frac{1}{3}$ in. from the perianth.—Noman's land, between Imerina and Betsileo, *Baron* 339! This is probably the species from Central Madagascar named as above by Bojer; but, as he gives no description, this cannot be verified unless a specimen has been preserved somewhere. It is well-marked by its polyphyllous perianth and strictly spicate inflorescence, and I hope the resident botanists will soon send us full information about its leaves and habit. There is a second Madagascar species, *A. leptocaulon*, Bojer, Hort. Maur. 345 (name only), which has never been described, and of which we have no specimens: this covers the summits of the mountains on the banks of the River Omlahi, which flows into the bay of St. Augustin. Judging from Bojer's note on its habit, its alliance is with *A. tenuior* and *A. ciliaris* of the Cape.

Anthericum (*Phalangium*) tripedale, n. sp.—Leaves in a dense basal rosette, linear, 1$\frac{1}{2}$–2 ft. long, $\frac{1}{6}$ in. broad, tapering to the point, firm in texture, with a distinct midrib, and numerous close distinct much-raised scabrous ribs. Peduncle terete, as long as the leaves, with only 1–2 empty bracts, the lower foliaceous. Flowers 30–40 in a lax raceme above a foot long; pedicels erecto-patent, geminate, $\frac{1}{4}$–$\frac{1}{3}$ in. long, articulated at the middle; bracts deltoid, reddish, membranous, the upper $\frac{1}{8}$, the lower $\frac{1}{4}$ in. long. Perianth white, $\frac{1}{3}$–$\frac{1}{2}$ in. long, the oblong-lanceolate divisions with 5–6 distinct ribs in the centre. Stamens rather shorter than the perianth-segments; anthers lanceolate, $\frac{1}{6}$ in. long; filaments linear, shorter than the anthers, not muricated. Capsule with 3 oblong rugose glabrous valves, $\frac{1}{2}$ in. long; seeds many in each cell, superposed.—Hillsides in West Betsileo, flowering in December and January, *Baron* 74! Habit of *A. triflorum*, Ait., of the Cape, with very different stamens.

Anthericum Parkeri, n. sp.—Root a dense tuft of fleshy cylindrical fibres, with several dry scariose linear leaves at the crown. Produced leaves 5–6, linear, 1$\frac{1}{2}$ in. broad, tapering to the point, green, glabrous, firm in texture, with close distinct ribs. Peduncle very short. Flowers in a lax simple raceme, finally 2–3 in. long, and reaching to the top of the leaves; bracts small, lanceolate or deltoid; pedicels geminate, finally $\frac{1}{4}$–$\frac{1}{3}$ in. long, articulated below the middle. Perianth 1-12th in. long; segments oblong-lanceolate, the central third of the 3 outer greenish, with 3 indistinct ribs, not contorted after flowering. Stamens included; filaments linear, glabrous, twice as long as the minute subglobose anthers. Capsule depresso-globose, $\frac{1}{6}$ in. diam., deeply 3-lobed, with 2 turgid black seeds in each cell.—Central Madagascar, *Dr. Parker!* Native name *Ahitrakondro*. A doubtful member of the subgenus *Streptanthera*, of which it has the geminate ovules, but not the linear-oblong perianth-segments, which, as in *Cæsia*, twist up spirally after fertilisation.

Asparagus simulans, Baker.—Very common in forests throughout Betsileo and Imerina, *Baron* 220!

Dioscorea Ovinala, n. sp.—A climber, with an edible tuber and slender terete downy stems. Leaves alternate, long-petioled, simple, cordate-ovate-cuspidate, 2–3 in. long, not coriaceous, green and obscurely pilose above, matted with persistent grey tomentum beneath, furnished with 5–7 distinct vertical ribs. Male flowers in lax solitary shortly-peduncled spikes 1½–2 in long from the axils of the leaves; flowers distant, 1–2-nate; rachis flexuose, densely pubescent; pedicels 0 or very short; bracts minute, lanceolate. Male perianth 1-16th in. diam. when fully expanded; segments oblong, much imbricated, bright red. Fertile stamens 6, ¼ as long as the perianth-segments; anthers minute, globose, yellow, about as long as the filaments. Female flowers and fruit not seen.—Woods in Betsileo-land, flowering in January, *Baron* 52! Native name *Ovin-ala.*

DIOSCOREA HEXAGONA, n. sp.—A twining shrub, glabrous in all its parts, with woody branchlets, with about six acute angles. Leaves simple, alternate, subsessile, elliptic, rounded at both ends, distinctly cuspidate or rarely lanceolate, acute, subcoriaceous in texture, green and glabrous on both surfaces, with 5–7 prominent vertical ribs running from base to apex. Male flowers in 1–2-nate subdense spikes 1–3 in. long, on short peduncles from the axils of the leaves; flowers usually 2 to a node; pedicels 0 or very short; bracts lanceolate, 1-16th to 1-12th in. long. Male perianth campanulate, ½ lin. long; segments oblong, obtuse, much imbricated permanently. Fertile stamens 6, 1-4th to 1-5th as long as the perianth-segments; anthers globose, as long as the filaments. Female flowers and fruit not seen.—Hillsides in West Betsileo, flowering in December and January, *Baron* 95! 140!

DIOSCOREA HETEROPODA, n. sp.—A climber, glabrous in all its parts, with slender angled twining stems and large tubers, which are edible, but not palatable. Leaves alternate; petiole shorter than the blade, which is cordate-ovate cuspidate, 2–3 in. long on the flowering branchlets, but sometimes 6–8 in., moderately firm in texture, green on both surfaces, with 11–13 distinct vertical ribs connected by cross-veinlets. Male flowers in lax 1–2-nate racemes 1–3 in. long on short peduncles from the axils of the leaves; pedicels often 3–4 to a node, very unequal, the longest 3–4 times as long as the perianth; rachis slender, angled, glabrous; bracts minute, lanceolate. Male flowers yellowish white, 1 lin. diam. when fully expanded; segments oblong or suborbicular, much imbricated, ½ lin. long. Fertile stamens 6, not more than ¼ as long as the perianth-segments, incurved, the globose anthers ½ as long as the filaments. Female flowers and fruit not seen. —Betsileo-country, flowering in December and January, *Baron* 119! 139!

XEROPHYTA PECTINATA, n. sp.—A much-branched shrub, 1–3 feet high. Branches ½ in. diam., clothed with the closely imbricated squarrose woody bases of the old leaves, with their close flattened brown spinulose ribs. Produced leaves 6–15 in a rosette, linear, erect, ½ ft. long, 1-12th in. broad at the base, rigid in texture, tapering to a point, channelled down the face, closely ribbed, the young ones ciliated with crowded spreading pale brown bristles

1-12th in. long, the old ones denticulate. Peduncles 2–4 to a rosette, as long as or rather longer than the leaves, scabrous, with sessile black glands in the upper half. Ovary cylindrical, $\frac{1}{4}$ in. long, rugose, with crowded black sessile glands, without any bristles. Perianth-segments lanceolate, tinged with lilac, $\frac{3}{4}$–$\frac{7}{8}$ in. long. Anthers linear, $\frac{1}{2}$ in. long, yellow; filaments very short. Fruit oblong, 3-lobed, with numerous small seeds in each cell.—Rocky ground in Betsileo-land, flowering from November to January. Native name *Hosana*. Nearly allied to *X. dasylirioides*, Baker, in Journ. Bot., 1875, p. 235, a species gathered by Bojer in the mountains of the province of Imerina.

Xerophyta sessiliflora, n. sp.—A much-branched shrub, about ✓ a foot high, with terete woody stems $\frac{1}{6}$–$\frac{1}{4}$ in. diam., clasped by the truncate adpressed bases of the old leaves, the flat unciliated ribs of which have narrow hollows between them. Produced leaves 6–10 in a lax rosette, spreading or reflexed, linear, rigid in texture, about an inch long, with a tuft of white fibres in the axils, tapering to a point, acutely channelled down the face, bordered on the edges and keel beneath with small ascending spines like those of a *Pandanus*. Flowers solitary, sessile at the end of the branchlets. Ovary cylindrical, $\frac{1}{6}$ in. long, with a few black sessile glands. Perianth-segments lanceolate, $\frac{1}{2}$ in. long. Anthers $\frac{1}{6}$ in. long, nearly sessile. Capsule subglobose, $\frac{1}{6}$ in. long, with a few black glands.—Rocky ground in the Betsileo-country, flowering from November to January, *Baron* 13! Native name *Hosana*, like the other species.

Lycopodium strictum, n. sp. — Stems pendulous, flexuose, forked, about a foot long. Leaves alternate, quadrifarious, sessile, ascending, much imbricated, oblong, 1-5th to 1-4th in. long, obtuse, thick and firm in texture, the midrib quite hidden. Spikes sessile, terminal, 2–3 in. long, 2–3 times dichotomously forked, square, 1 lin. diam.; bracts suborbicular, obtuse, slightly imbricated, about as long as the sporangia.—Central Madagascar, *Dr. Parker!* A near ally of *L. gnidioides*, L.

RECENT ADDITIONS TO THE BRITISH LICHEN-FLORA.

By the Rev. J. M. Crombie, F.L.S.

Since the publication of the last edition of Leighton's 'Lichen-Flora of Great Britain' (1879), the following species and varieties (exclusive of *Cladoniei*) have now to be added to our already extensive Lichen-Flora. With the exception of those of which the diagnoses are here given, the numerous new species and varieties have been recorded by me from time to time in 'Grevillea.'

Pyrenopsis subareolata, Nyl.—On schistose rocks. Barmouth, N. Wales (Dr. Holl). A somewhat atypical state.

Lichiniza Kenmorensis, (Holl), Nyl., in Flora, 1881, p. 6, gen. & sp. n. — On micaceo-schistose boulders. Shores of Loch Tay, at Kenmore, Perthshire (Dr. Holl). Apothecia not seen rightly evolute.

Collema concinnum, Flot. — On rocks and wall-tops. Near Penzance, Cornwall (Curnow); Barmouth, N. Wales (Salwey); Connemara, Ireland (Larbalestier). This is distinguished from *C. crispum* by the smaller thallus and spores.

C. tenax, var. *coronatum*, Krb.—On the ground and amongst mosses on walls. Not uncommon in W. England, the W. Highlands of Scotland, and S.W. Ireland. This is the *Lichen cristatus* of earlier British authors.

Leptogium (*Homodium*) *placodiellum*, Nyl.—On calcareous rocks. Cleve Hill, Somersetshire (Joshua). Sterile.

L. (*Collemodium*) *glebulentum*, Nyl., in litt. sp. n.—On calcareous rocks. Craig Guie, Braemar (Crombie, 1870). Thallus olive-brown, thickly isidiose; the isidia granuloso-crustose, glumuloso-diffract, membranaceous and sublobate at the circumference, internally entirely cellulose; apothecia and spermogones unknown. It is allied to *L. rivulare* (Ach.).

**Calicium curtiusculum*, Nyl., in Flora, 1879, p. 360.—On wood and old pales. Cambridge (Larbalestier); near Lewes, Sussex (Crombie). A subspecies of *C. quercinum*.

C. pusillum, Flk.—On decorticated trees. Deer Park, Castle Martyr, Co. Cork (I. Carroll).

Stenocybe euspora, Nyl. — On the bark of trees. Mangerton, Kerry. Ireland (Carroll). Distinguished from *S. trajecta*, Nyl. (= *Sphinctrina septata*, Leight.), especially by the smaller spores.

Stereocaulon denudatum, var. *pulvinatum*, Schær. — On the ground and on rocks. Mountains of Wales; N. England; the Scottish Grampians; and S.W. Ireland. Not uncommon.

Ramalina fraxinea, var. *calicariformis*, Nyl.—On the trunks of trees. Near Barmouth, N. Wales (Salwey); Kendal, Westmoreland (Martindale).

**R. capitata*, Ach.—On mountain rocks. Teesdale, Durham (Harriman); Ben-naboord, Braemar (Crombie). Always sterile.

**R. breviuscula*, Nyl.—On maritime and mountain rocks. S. and W. England; N.E. Scotland. Very sparingly fertile.

R. minuscula, Nyl.—On the branches of stunted larches. Craig Cluny, Braemar (Crombie).

Usnea scabrata, Nyl., in Flora, 1875, p. 103.—On the trunks and branches of larch-trees. Ben Lawers, Perthshire (Crombie).

U. ceratina, var. *scabrosa*, Ach.—On shrubs, trees, and rocks. Not uncommon in maritime and mountainous tracts of Great Britain.

Cetraria odontella, Ach.—Amongst mosses on a large boulder. Upper Glen Dee, Braemar (Crombie). Very sparingly gathered.

Platysma polyschizum, Nyl.—On alpine rocks. Near the summit of Ben-naboord, Braemar (Crombie).

Parmelia carporhizans, Tayl.—On rocks and trees. Not uncommon in S. England. To this is referable Sm. E. B., t. 700.

P. omphalodes, f. *cæsiopruinosa*, Nyl.—On alpine rocks. Summits of Ben Lawers and Craig Calliach, Perthshire (Crombie).

P. subaurifera, Nyl.—On the trunks and branches of trees. Chiefly in S. England, and amongst the Scottish Grampians.

**P. Delisei*, var. *isidiascens*, Nyl.—On rocks in maritime and upland districts. W. England and Central Scotland. Very rarely fertile.

P. prolixa * *sorediata*, Ach.—On mountain rocks. Craig Guie, Braemar (Crombie). Sparingly gathered.

Physcia pulverulenta, f. *panniformis*, Cromb., in Journ. Linn. Soc. Bot., xvii., p. 571.—On trunks of old trees. Harboro' Magna, Warwickshire (Bloxam). Laciniæ short, crowded, densely imbricated; apothecia small.

P. pulverulenta, f. *deminuta*, Cromb.—On the trunks and branches of trees. S. and W. England (Bloxam and Joshua). Thallus effuse, the laciniæ minute, more or less diffract; apothecia minute.

P. pulverulenta, var. *subpapillosa*, Cromb.—On the trunks of old trees. Bury St. Edmunds, Suffolk. Thallus almost entirely subgranulato-unequal or subpapillato-granulated.

P. aipolia, var. *anthelina*, Ach.—On trees and old pales. Henfield, Sussex (Borrer).

P. tribacia, Ach.—On fruit-trees in orchards. Rare in the Channel Islands and S. England. Always sterile.

Umbilicaria atropruinosa, Schær.—On alpine rocks. Summit of Cairntoul, Braemar (Crombie). Very rare.

Gyrophora proboscidea, var. *deplicans*, Nyl.—On alpine rocks. Ben-naboord, Braemar (Crombie).

G. cylindrica, var. *Delisei*, Despr.—On alpine rocks. Ben-naboord, Braemar, and Ben Nevis, Lochaber (Crombie).

G. torrida, f. *subdividens*, Nyl.—On rocks. Connemara, Galway (Larbalestier).

Lecanora (*Placodium*) *xantholyta*, Nyl., in Flora, 1879, p. 361, sp. n.—On calcareous rocks. Bathampton Downs (Joshua); near Stokesay, Shropshire (Leighton); Great Orme's Head (Holmes); near Kendal (Martindale); Craig Tulloch, Blair Athole (Crombie). Always sterile.

L. cæsiorufa (Ach.), Nyl.—On maritime and mountain rocks. Local in S. and W. England, W. Highlands of Scotland, and W. Ireland. According to Nylander (in. litt.), *L. scotoplaca*, Nyl., is a variety of this, and not of *L. ferruginea*.

L. albolutescens, Nyl., in Flora, 1881, p. 177, sp. n.—On quartzose rocks. Stocksfield, Northumberland (Rev. W. Johnson).

L. cerinella, Nyl.—On branches of trees, Near Cambridge (Larbalestier).

L. vitellinula, Nyl.—On calcareous rocks. Apparently local in S. and W. England, and in W. Ireland.

L. xanthostigma (Ach.), Nyl.—On old trunks of trees. Glynde, Sussex (Crombie); near Bradford, Yorkshire (in hb. Sowerby).

L. colobina, Ach.—On elm trees. Near Cambridge (Larbalestier).

L. teichophila, Nyl.—On walls. Thetford, Suffolk (Larbalestier), fide Nylander.

L. umbrinofusca, Nyl., in Flora, 1880, p. 389, sp. n. -- On siliceous stones. Thetford, Suffolk (Larbalestier).

L. pruinifera, Nyl.—On calcareous rocks. Cleve Hill, Somerset (Joshua).

L. schistina, Nyl. — On schistose maritime rocks. Barmouth (Salwey); Barcaldine, Argyleshire (Crombie).

L. umbraticula, Nyl., in Flora, 1879, p. 205, sp. n-—On shady calcareous rocks. Kylemore, Galway (Larbalestier).

L. Hutchinsiæ, f. *congregabilis*, Nyl., in Flora, 1879, p. 361.— On shady rocks. Kylemore, Galway (Larbalestier).

L. phæoleucodes, Nyl., in Flora, 1879, p. 356, sp. n.--On calcareous rocks. Island of Lismore, Argyleshire (Crombie).

L. metaboloides, Nyl.—On old pales and dead stumps of trees. Abundant about Killin, and very variable. To this belongs as a biatoroid form *Biatora sarcopsoides*, Mass., *vid.* Flora, 1881, p. 184.

**L. subtartarea*, Nyl.—On trunks of aged trees. Probably not uncommon in Great Britain. Of this var. *leprosa*, Nyl., is a state with the thallus entirely leproso-dissolved, which occurs usually upon rocks.

L. nitens, Flk.—On schistose maritime rocks. Island of Sark (Crombie). On the thallus there occurs plentifully as a parasite *Sphinctrina Kylemoriensis* (Larb,), which Leighton very erroneously refers to *Calicium*.

L. Bockii, Rodig.--On walls. Near Staveley, Westmoreland (Martindale). Not typical. but a depauperate state.

L. superiuscula, Nyl., in Flora, 1879, p. 355, sp. n.—On micaceo-schistose rocks. Above Loch-na-Gat, Ben Lawers (Crombie).

L. coracina, (Hepp.), var. *lecideina*, Krb.—On rocks. Braumanor Park, Leicestershire (Larbalestier).

L. lusca, Nyl., Pyr. Or., p. 34, note. — On sandstone walls. Scale Hill, Lazonby, Cumberland (Martindale). In Flora, 1881, p. 7, Nylander says that this may be a subspecies of *L. subdepressa*, Nyl.

L. leprothelia, Nyl.—On the ground in alpine situations. Ben Lawers, Perthshire (Crombie).

L. chrysophana, Krb. — On alpine rocks. Summit of Bennaboord, Braemar (Crombie). Only very sparingly gathered.

L. rhagadiza, Nyl., in Flora, 1881, p. 178, sp. n. — On moist sandstone rocks. Whitehaven, Cumberland (Rev. W. Johnson).

Pertusaria lactea, Schær. — On micaceo-schistose rocks. Craig Calliach, Perthshire (Crombie).

P. spilomanthodes, Nyl., in Flora, 1881, p. 179, sp. n. — On granite rocks. Ennerdale, Cumberland (Rev. W. Johnson).

Varicellaria microsticta, Nyl.—On the ground amongst mosses. Near the summit of Ben Avon, Braemar (Crombie). Probably also corticole in that district.

Pannularia delicatula, Th. Fr.—On mosses. Connemara, Galway (Larbalestier), *fide* Nylander.

Lecidea coarctata, var. *ocrinæta*, Ach. — On sandstone rocks. Fairlight, near Hastings, Sussex (Holmes); Achrosagan Hill, Appin (Crombie).

**L. delutula*, Nyl., in Flora, 1879, p. 223, subsp. n.—On siliceous rocks. Kylemore, Galway (Larbalestier). A subspecies probably of *L. Arnoldi* (Kphb.).

L. alabastrites, Nyl., in Flora, 1879, p. 207, sp. n.—On mossy trunks of old trees. Kylemore, Galway (Larbalestier).

L. byssoboliza, Nyl., in Flora, 1879, p. 206, sp. n.—On calcareous and schistose rocks. In a cave at Kylemore, Galway (Larbalestier).

L. Heerii, Hepp.—On the thallus of *Solorina crocea*. Near the summit of Ben Lawers.

L. cæsiolepra, Nyl., in Flora, 1881, p. 532, sp. n.—On sandstone rocks and quartzose soil. Island of Brichou, near Sark (Larbalestier). "Thallus cæsious, leprose, soft, thin, effuse, subrimose ($K+$ yellowish); apothecia brown, slightly cæsio-pruinose, the margin evanescent; spores 8næ, colourless, ellipsoid, 1-septate, 0·009–0·011 millim. long, 0·004–5 millim. thick; paraphyses submoderate, inspersed at the apices; hymenial gelatine pale bluish, the thecæ tawny with iodine. It belongs to the section of *L. cyrtella*."

L. syncomista * *perpallescens*, Nyl., in Flora, 1879, p. 361, subsp. n.—On the ground in crevices of rocks. Island of Lismore, Argyleshire (Crombie). Very rare.

L. Berengeriana, var. *perileuciza*, Nyl., in litt.—Incrusting decayed mosses on the ground in alpine situations. Near the summit of Ben Lawers (Crombie). Apothecia whitish, and circumcised at the epithalline base.

L. inundata * *allecta*, Nyl., in Flora, 1877, p. 567, subsp. n.—On siliceous rocks. Kylemore, Galway (Larbalestier).

L. socialis, Hepp.—On mosses in alpine situations. Summit of Craig Calliach, Perthshire (Crombie).

L. consentiens, f. *circumcissa*, Nyl.—On schistose alpine rocks. Summit of Craig Calliach (Crombie). Apothecia circumcised from the thallus.

L. promiscens, Nyl.—On quartzose boulders. Morrone, Braemar (Crombie).

L. nigrogrisea, Nyl., in Flora, 1879, p. 357, sp. n.—On micaceo-schistose walls. Craig Tulloch, Blair Athole (Crombie). Very sparingly gathered.

L. tabidula, Nyl., in Flora, 1879, p. 357, sp. n.—On arenaceous quartz in alpine situations. Summit of Cairn Gowar, Ben-y-gloe Mountains, Blair Athole (Crombie).

L. macula, Tayl. (= *L. perustula*, Nyl., in Flora, 1879, p. 221).—On siliceous mountain rocks. Dunkerron, Kerry (Taylor); Kylemore, Galway (Larbalestier).

L. illita, Nyl., in Flora, 1879, p. 356, sp. n.—On argillaceous schist. W. England (Larbalestier).

L. rhypodiza, Nyl., in Flora, 1881, p. 5, sp. n.—On alpine schistose rocks. Near the summit of Craig Calliach (Crombie).

L. æthalea, Ach.—On schistose maritime rocks. Island of Lismore, Argyleshire (Crombie).

L. abietina, var. *incrustans*, Ach.—Amongst mosses on rocks. Near Eridge, Sussex (in hb. E. Forster).

Odontotrema minus, Nyl. — On old stems of *Erica Tetralix*. Achrosagan Hill, Appin (Crombie).

O. firmatum, Nyl., in Flora, 1881, p. 188, sp. n.—On semiputrid fir-stumps. Ben Lawers (Crombie).

Opegrapha paraxanthodes. Nyl., in Flora, 1879, p. 357, sp. n.—On shady calcareous rocks. Achnanure, Galway (Larbalestier).

O. devulgata, Nyl., in Flora, 1879, p. 358, sp. n.—On decorticated trunks. Airds, Appin (Crombie),

O. nothiza, Nyl., in Flora, 1880, p. 13, sp. n. — On quartzose rocks. Island of Jersey (Larbalestier).

O. actophila, Nyl., in Flora, 1880, p. 13, sp. n. — On felspar rocks. Island of Jersey (Larbalestier).

O. atrula, var. *hysteriiformis*, Nyl., in Flora, 1879, p. 224.—On micaceo-schistose rocks. Kylemore, Galway (Larbalestier).

O. saxigena, f. *clarescens*, Nyl., in Flora, 1879, p. 224.—On rocks. Kylemore, Galway (Larbalestier); Appin, Argyleshire (Crombie).

Arthonia subexcedens, Nyl., in Flora, 1879, p. 221, sp. n.—On the bark of hollies. Near Kylemore, Galway (Larbalestier).

Chiodecton subdiscordans, Nyl., in Flora, 1879, p. 221, sp. n.—On moist rocks. Near Kylemore, Galway (Larbalestier).

Stigmatidium circumscriptum, f. *dendrizum*, Nyl., in Flora, 1881, p. 188.—On quartzose rocks. Island of Jersey (Larbalestier).

Verrucaria submuralis, Nyl. — On limestone rocks. Island of Lismore (Crombie). Very rare.

V. integra * *integrella*, Nyl.—On limestone rocks. Island of Lismore (Crombie).

V. prominula * *viridans*, Nyl., in Flora, 1879, p. 224.—On maritime rocks. Near Kylemore, Galway (Larbalestier).

V. elæomelæna, Mass. — On stones in streams. Chedworth, Gloucestershire (Joshua).

V. conturmatula, Nyl., in Flora, 1879, p. 222, sp. n. — On quartzose rocks in streams. Kylemore, Galway (Larbalestier).

V. interseptula, Nyl., in Flora, 1881, p. 453, sp. n.—On moist siliceous rocks. Wastdale, Cumberland (Rev. W. Johnson). "Thallus olive, opaque, thin; apothecia with the pyrenium dimidiate-black, subconically convexo-prominent, epithecium not impressed; spores 8næ, colourless, fusiform, 5-septate, with one or two longitudinal septules, 0·020–24 millim. long, 0·006–7 millim. thick." It belongs to the section of *V. chlorotica*.

V. grisea, Schær.—On alder by streams. Banks of the Garry, Blair Athole (Crombie).

V. epidermidis * *pyrenastrellum*, Nyl.—On alder. Shores of Loch Creran, Barcaldine, Argyleshire (Crombie).

Endococcus erraticus * *microphorus*, Nyl., in Flora, 1881, p. 189, subsp. n.—On the thallus of various crustaceous lichens. Cardiganshire (Joshua).

E. exerrans, Nyl., in Flora, 1879, p. 360, sp. n.—On arenaceous quartz stones in alpine situations. Summit of Cairn Gowar, Blair Athole (Crombie).

ON THE EUROPEAN SPECIES OF *FESTUCA.*

By F. Townsend, M.A., F.L.S.

A hasty glance at the earlier pages of Prof. Hackel's lately published 'Monographia Festucarum Europæarum'* might give the reader a false impression of the character of the work. He would find the first sixty pages of descriptive matter teeming with the oft-repeated terms, "subspecies," "variety," "subvariety"; he would see *Festuca ovina* divided into nine subspecies, and the first subspecies into eight varieties, and he might well suppose the writer to be a disciple of the Jordan school; but a careful perusal of the preface and introduction would soon convince him that Prof. Hackel is a disciple of the newer school of evolutionists, who does not neglect to pay the closest attention to, and weigh the evidence of, minute variation, while he recognises the inherent power given by the Creator to produce stable forms; and the thanks of the systematic botanist, as well as the student of biology, are due to Prof. Hackel for giving us the results of his most careful investigation of the genus *Festuca*. It is not everyone who is content to devote so much time to the elucidation of so small a group, but the time so applied, in the hands of a competent investigator, is sure to be repaid by the discovery of many interesting facts and laws which, though not necessarily true when applied to other forms, are yet lights to guide us in all future investigation. The Professor seeks to do for the genus *Festuca* what Prof. Babington and Dr. Focke have done for the genus *Rubus*, and what other botanists have done in the same direction for other variable and difficult genera.

There are in the genus *Festuca*, as in many other genera, some forms which, within certain limits, appear to be indued with large powers to vary; such groups are presented in *Festuca ovina*, *rubra*, and *varia;* and the author seeks to arrange the members of these systematically, and to extricate them from the web of confusion which various botanists have spun over them. For this purpose he has introduced characters which have not hitherto been made use of; but, as I purpose to review the work in considerable detail, I will not anticipate the opinions and conclusions of the author, but will take them somewhat in the order in which they are given in the monograph.

A.—Morphology and Histology.

All the species of *Festuca* are perennial. New shoots—*innovationes* (DC., Théor. élément.)—are produced from the lower internodes of the rhizoma or rootstock, and whether the latter be creeping or cæspitose depends upon the number, length, and direction of these shoots. The growth of the axis of the shoot, when in the bud, is either apogeotropic, or diageotropic, or it may be geotropic, though this mode of growth is found but in two

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* 'Monographia Festucarum Europæarum,'......(Kassel and Berlin, 1882).

European species. If the growth of the axis of the bud be *apogeotropic*, the young shoot continues to grow closely pressed to the parent axis between it and the sheath of the leaf in the axil of which it is produced; the author terms shoots thus produced "*innovationes intravaginales.*" If the growth of the axis of the bud be more or less *diageotropic*, then its apex grows in a horizontal direction and away from the parent axis, and it either pierces through the sheath of the leaf in the axil of which it is produced, or the bud has to wait until the sheath is decayed before it can continue its growth. In either case the growth of the bud or shoot continues outside the sheath, and the author terms buds which have this mode of growth "*innovationes extravaginales.*"

This diageotropic growth continues for a longer or a shorter period; in the former case the shoot becomes a creeping rhizoma (sobole), which ultimately curves upwards, and the after growth becomes apogeotropic, as in *F. rubra-genuina;* in the latter case, though the growth of the bud is at first diageotropic, yet after piercing through the sheath the growth suddenly becomes apogeotropic, and the shoot is sharply bent at its base and continues to grow parallel with and close to the mother axis; this mode of growth takes place in *F. rubra* var. *fallax*, and var. *violacea.* The rhizoma in this case is densely cæspitose, as in intravaginal growth. Soboliferous growth must evidently always be extravaginal, yet intravaginal growth (innovationes intravaginales) may present the appearance of soboliferous growth, as in *F. ovina* when growing in loose or sandy soil. When the direction of the shoot can no longer be ascertained, as in herbarium specimens, such shoots as those last described are often taken for soboles. Thus *F. varia* and *F. eskia* have been described as often having a creeping rhizoma, though these two species are intravaginal. The author terms the rhizoma with this peculiar growth—*rhizoma pseudo-repens*, and he has noticed it in *F. ovina* var. *glauca*, var. *vaginata; F. varia*, *F. elegans*, and *F. sylvatica. Glyceria maritima* when deeply covered with mud exhibits a similar growth, and has been described, erroneously, as having a creeping rhizoma.

In living specimens the character of the innovation is easily observed. The first leaf of the innovation of *intravaginales* is long and linear, as long as the sheath of the following leaf—Ex. *F. ovina*, *F. varia.* The first leaf of *intravaginales* is short, roundish or ovate, and much shorter than the following leaf-sheath—Ex. *F. sylvatica*, *F. laxa.* The succeeding leaves of *intravaginales* are perfect, and furnished with blades. The succeeding leaves of *extravaginales* are 1–3, or in *F. sylvatica* 4–5 in number, and are bract-like, without blades. There are only two instances, among the European species of *Festuca*, of geotropic growth, viz., *F. spadicea* and *F. cærulescens.*

The author considers the root-fibres of little value in the discrimination of species.

Characters drawn from the form of the stem, whether angular or round, &c., cannot be depended on.

Characters drawn from the innovation leaves are more valuable than those drawn from the leaves of the culm. The former live for six months, and have to accommodate themselves to very varied conditions; the latter live about one month only, for they die soon after the flowers are perfected.

Out of twenty-eight species of *Festuca* described by Prof. Hackel there are eighteen with split sheaths, eight with closed sheaths, one in which the character of the sheath is variable (*F. ovina*), and one in which the character of the sheath has not been observed, viz., *F. Morisiana*. The sheath of the uppermost leaf of the innovation should be chosen for examination.

The closed sheaths of *F. scaberrima* and *amethystina* are very remarkable. The upper half of the sheath is split, the lower half is closed, though the two edges overlap, the connection being effected by a membrane which lies behind a deep and narrow furrow. The closed sheaths of other species are even and unfurrowed. Hence the above character is a most valuable one.

Valuable characters may be drawn from the *marcescent* sheaths. Some become filamentous, while others have a thick and imperishable epidermis, so that the fibres do not become freed. Very remarkable is the way in which the sheath withers in two Spanish species, *F. Clementei* and *F. plicata;* the sheath becomes transversely rugose or striped, and ultimately transversely filamentous; this is better seen in the former than in the latter species.

Koch uses the character taken from the ligule to mark not only species, but sections; but although of great value, it cannot be satisfactorily thus used. Dutailly, in 1878, pointed out that *F. eskia*, Ram., is furnished with three delicate nerves.

The *vernation* of *Festuca* is usually *conduplicate* when the blade continues to bear the same form which it had when in the bud; it is therefore wrong to describe the leaves of *F. ovina* and *F. varia* as *convolute;* they are oftener *complicate.*

The flattening out of the leaves of *Festuca*, as of all grasses, is caused by the turgescence of cells which lie between the ribs on the upper side of the leaf; and the cells between the ribs near the centre of the leaf swell more than those near the side. Prof. Hackel adopts Duval Jouve's name, *cellulæ bulliformes*, for these cells; and as they are universally present in flat leaves, their presence may be ascertained, even if the leaf be dry, rolled up, and withered, and the character of the leaf determined, whether, when living, it was flat or otherwise. Nevertheless too great dependence should not be placed on this character, as the cells, though present, are sometimes hardly larger than the surrounding ones. In damp weather and in wet situations, true folded leaves, in which no cellulæ bulliformes are present, may unfold and present the appearance of flat leaves. Excellent magnified representations of sections of the different forms of the leaves are given in three plates. The comparative width of the blade is of great value as a distinctive character in determining species, subspecies, and varieties, but only in the case of those which have folded leaves; it is valueless for those which have flat leaves.

The form of the extremity of the leaf affords important diagnostic characters—ex. in *F. arundinacea* it is obtuse, though the blade itself gradually narrows. *Stomata* are found only on the upper surface of folded leaves, but on both surfaces of flat leaves, though fewer in number on the under surface.

Several pages are given to the consideration of the construction and disposition of the tissues of the blade, and we find Schwendener very frequently quoted, pp. 24–32.

The author lays much stress on the fact that certain characters, which are very variable as regards some organs, are on the other hand constant as regards other organs; for example, the hairiness of the leaves is variable, while that of the ovary is constant. As regards the spreading of the panicle during flowering time, the close panicle is much rarer than is usually admitted. Grenier and Godron describe *F. tenuifolia* as differing from *F. ovina* in having a close panicle when in flower, whereas both have an open one at that time. *F. pulchella* var. *plicata*, the panicle of which remains open after flowering, offers a remarkable exception to the usual rule, that all *Festucæ* have a more or less close panicle, except when in flower.

Some authors describe the rachis of *Festuca* as universally triangular, which is an error. *F. montana* and *sylvatica* offer exceptions; the panicle-branches of these species are also roundish, not triangular.

The presence or absence of an awn to the pale, and the form of the latter, offer characters of little value for diagnosis.

The author adopts the view of Turpin, Bentham, &c., as regards the homology of the spikelet and flower, recognising the two outer glumes as barren glumes, the outer pale as a fertile glume, and the inner pale as the only true pale (prophyllum). The lodicules Prof. Hackel looks upon as representing a single organ (a second prophyllum). My own observation and study in this direction have led me to adopt a similar view, and to consider the true pale as a single organ and the two lodicules as another single organ, the former (the pale) being of the nature of a bract, the latter (the lodicules) representing part of the true floral whorl. In *Bromus* I have found all three stamens situate on the inner face of the lodicles, two stamens on one lodicle, and one stamen on the other lodicle. A paper by Prof. Hackel, alluded to by Mr. Bentham as a very able one (Journ. Linn. Soc., xix., p. 23), will be found on this subject in Engler's 'Botanische Jahrbücher' (i., p. 336).

Prof. Hackel finds little difference in the stamens, except in size. The pollen grains are always similarly formed.

The ovary offers valuable diagnostic characters, and the Professor gives it as his opinion that on the whole the parts of the flowers, with the exception of the ovary, *are of much less value for diagnosis than the leaves;* and he instances the florets of *F. ovina* and *F. rubra*, two widely distinctive species, but which cannot be separated by their florets.

The *caryopsis* in two of Prof. Hackel's sections, viz., Sect. 4, *Variæ*, and Sect. 6, *Montanæ*, is stated to be universally free, or attached only at its base to the pale.

The form of the *hilum* is linear in all but one species, in which it is lanceolate, *i. e.*, in *F. granatensis*. In the other species it is usually three-fourths the length of the caryopsis, except in *F. sylvatica*, where it is half its length. This character sharply separates *Festuca* from *Poa*, in which the hilum is very short; and *F. rhætica*, Sut. (*F. pilosa*, Hall. fil., *Poa violacea*, Bell.), is therefore rightly classed as a *Poa* of the latter botanist.

(To be continued.)

THE "MARIANNE NORTH" GALLERY.

A GREAT additional attraction has recently been added to the Royal Gardens at Kew, in the shape of a gallery of oil paintings, which presents many novel and indeed unique features. The building itself and its contents are presented to the public by the munificence of Miss Marianne North, who is herself the artist of the pictures—627 in number—which form this attractive exhibition.

Miss North has travelled all over the world in search of material on which to employ her facile pencil, and, far from being satisfied with the really great amount of work already accomplished, she is at the present time on her way to the Cape, with the view of increasing her collection of paintings. The special interest of the exhibition, as Sir Joseph Hooker remarks in his preface to the handy little 'Descriptive Catalogue' of the collection which Mr. Hemsley has prepared, lies in the fact that many of the names and objects depicted, "though now accessible to travellers and familiar to readers of travels, are already disappearing or are doomed shortly to disappear before the axe and the forest fires, the plough and the flock, of the ever advancing settler or colonist. Such scenes can never be renewed by Nature, nor when once effaced can they be pictured to the mind's eye, except by means of such records" as these; the beautiful *Eucalyptus macrocarpa* of West Australia, for example, "has been nearly extirpated by sheep in the one district [of Western Australia] where it is known to grow." No greater testimony to the accuracy which characterises Miss North's work can be found than that which is given by the fact that two new species of plants have been described from these paintings. One of these is a *Nepenthes*, appropriately named *Northiana* (No. 383), from the limestone mountains of Sarawak, having "the largest pitcher of any known species, except *N. Rajah;* in consequence of seeing this painting, Messrs. Veitch sent a collector to Borneo on purpose to get the species, and he succeeded in bringing home living plants of it." Another Bornean *Nepenthes*, probably undescribed, is figured in No. 377; "the green inside of the pitchers, with two darker green spots or eyes just under the lid, is a noteworthy character of this species." The other described novelty, *Crinum Northianum*, is also from Borneo, where the catalogue tells us it is "common enough." The neatly-printed

Catalogue, of which a second and revised edition has just been issued, demands a word of praise, although we venture to doubt the accuracy of a statement in a contemporary that it "contains all that Miss North knows about the subjects and places painted."

Where all are so good it is difficult to single out any picture for special notice. Some of the groups of the wild flowers of certain regions—such as those of Victoria (564) of West Australia (551), of Tasmania (552), of the Himalayas (267), of Brazil (157), and of California (208)—are remarkable on account of the number of species which they contain, each being capable of identification.

One of the most noteworthy features connected with the Gallery is the studio, with appliances for drawing, which is open to artists who may wish to draw from the living plants in the gardens; the specimens can be removed to this room and there drawn. We would strongly advise all who can do so to visit the "Marianne North" Gallery—which, it may be well to mention, is open on Sundays as well as during the week—without delay; and we concur in Sir Joseph Hooker's expression of gratitude to the generous donor "for her fortitude as a traveller, her talent and industry as an artist, and her liberality and public spirit."

SHORT NOTES.

Monstrous Development of Cheiranthus Cheiri.—Towards the end of May I was struck with a strange appearance in the wallflowers in a garden at Daresbury, Cheshire, of which there was a great profusion. At least one-half of the plants were producing spikes of seed, apparently without having flowered, in the ordinary sense of the word; and the seed-pods of these plants were shortened and very much thickened. There were two varieties of wallflowers in the garden; one, the ordinary kind, with bronzed or dark red petals; the other with bright yellow flowers and more compact leaves; and both kinds were similarly, and about equally, monstrous. On examination I found the following teratological phenomena:—In every case the four sepals preserved their normal form and texture; in most of the flowers the petals were reduced to green linear scales, but in some they had partially taken on the form and colour of *sepals;* in some few the petals were developed to about half their usual size, and in a very few instances they were fully developed and of the usual colour; the ovaries, however, presented the most curious and interesting changes, having become compound; the central ovary in each flower was surrounded by three or four new ones, which were sometimes, perhaps more often than not, completely united to the central ovary; in other cases they were free, or partially so; when not completely united the new ovaries were only partly closed up, showing the ovules attached to their incurved edges; in no case were the exterior ovaries quite as long as the central one. At first I supposed that the rare circumstance had taken place of the conversion of stamens into pistils, a phenomenon known as "pistillody of stamens"; but on closer examination I found many instances where stamens were partially developed, and in most flowers the rudiments of stamens could be traced. It was, therefore, a case of the almost rarer phenomenon of "pleiotaxy of the gynœcium," an absolute increase in the number of pistil-whorls; and the suppression of stamens and petals seemed to be consequent on the increased development of the pistil. The fact that such numbers of the plants were similarly affected (for the monstrous spikes could be gathered by hundreds) was in itself a curious circumstance, and led to the inference that the plants were seedlings deriving their peculiarity from a deformed parent; but that could hardly have been the case, because two varieties were affected; and a further circumstance showed such an inference to be incorrect. At the latter end of June I observed in a garden at Frodsham, about five miles from Daresbury, a bed of wallflowers affected in precisely the same manner, though not by any means to so great an extent. It became evident therefore, that the phenomenon was caused by some external influence; but what? Perhaps the abnormally mild winter.—ROBERT HOLLAND.

CARUM VERTICILLATUM IN S. DEVON.—I gathered *Carum verticillatum* in a partially drained field about a mile from Cornwood railway station, S. Devon, on the 3rd of August last. It was growing rather sparsely there, but had probably been more plentiful before the spot had been drained. The specimens were mostly rather small ones. I believe the occurrence of this plant in Devon has not hitherto been satisfactorily ascertained, though it has been found in Cornwall. Its reported habitat near Moreton, S. Devon, requires verification.—F. B. DOVETON.

I have to record the addition of this plant to the flora of the neighbourhood of Plymouth, and at the same time to the list of species for South Devon (v.-c. 3, Watson, 'Top. Bot.'). On the 3rd of the present month (August), whilst with a friend searching for wild flowers, as we were examining the productions of a low damp meadow lying between the villages of Cornwood and Venton, I was glad to discover some small patches of the *Carum* dotted here and there amongst the other vegetation, which consisted of such herbage as is usually found in damp partially-drained spots towards Dartmoor, together with the more local *Hypericum bæticum* and *Bartsia viscosa*, L. Though not confined to one portion only of the enclosure, but dotted over some acres, it yet appeared quite sparingly, and perhaps altogether not a couple of dozen of flowering specimens could have been gathered. The locality is within District V. (Yealm) of 'Flora of Plymouth,' and is far to the south of any previously recorded ones; the nearest in this direction being, I believe, Egloskerry, near Launceston, where it was found by Mr. W. Wise, of the latter place, a few years ago. This would be about 25 N.W. of the new station.—T. R. ARCHER BRIGGS.

Selinum Carvifolia in Cambridgeshire. — A specimen of this plant was brought to me on August 16th, by my nephew, Mr. W. J. Cross, of Ely, a diligent young botanist who often consults me upon his "finds." He had collected it on swampy land near Foulham, Cambridgeshire, where I subsequently found it growing in considerable quantity, with such plants as *Angelica sylvestris*, *Vicia Cracca*, *Lythrum Salicaria*, *Lotus major*, *Juncus effusus*, &c. There can, I think, be no doubt that it is indigenous here. The plant bears a general resemblance to *Peucedanum palustre*, but the sharply ribbed stem at once distinguishes it.—W. Marshall.

Mr. F. A. Lees sends the following note on the locality from which *S. Carvifolia* was first reported (see p. 129):—"Last month Mr. Fowler and I visited the Broughton Wood locality for further observation. We found the plant over a considerable area, many acres, growing both amongst pasture grass of a rushy damp character and amongst bushes, in the thickets towards the edge of the pool, on sloping ground, above which it mainly occurs. There is a keeper's lodge not above three hundred yards from the spot, but the lodge is a newly built one, and the *Selinum* must have been growing where now found for some fifty years at least for it to have spread so. The parts of Broughton Wood above the pool are planted, doubtless; but the trees are fine and large oak, beech, ash, birch, larch, &c., of fully seventy or eighty years' growth. About the pool are clearings and spaces of rough open pasture. In the *drier* parts of slope *Selinum* grows about 18 inches to 2½ feet high, with *Silaus*, *Geranium sanguineum*, *Gymnadenia conopsea*, *Kœleria*, &c.; in the rushy pasture with *Blysmus compressus*, *Juncus acutifolius*, *Carduus pratensis*, and *Serratula;* in the bushy damp places with *Thalictrum flavum*, *Spiræa Ulmaria*, *Eupatorium* and *Lysimachia vulgaris*; here attaining a height of 4 feet, coming on to flower only in mid-July."—F. A. Lees.

Notices of Books.

Vegetable Technology; a Contribution towards a Bibliography of Economic Botany, with a comprehensive subject Index. By Benjamin Daydon Jackson, Secretary of the Linnean Society. London: Published for the Index Society. 1882.

The first thing to consider regarding a new book is, whether there is really any reason for it to have been written,—that is, whether it supplies an absolute want, as of course every author believes his own production to do. At the present day there is far too much inclination to produce books without considering whether they are needed or not. Works of reference, however, differ from the ordinary run of books; anything that will help us promptly to arrive at the information we may be seeking on any given subject is a boon; and though all such works may be more or less useful, there is a scale of utility under which they may be classified. Mr. B. D. Jackson's volume may be said to be a first attempt at anything like a catalogue of works on Economic Botany; and anyone who has the daily handling of books on the subject, and has to make constant references to the most varied matters that legitimately come under this head, must feel thankful for such a help.

'Vegetable Technology' does not claim to be exhaustive—indeed no work of the kind could ever be perfect. Mr. Jackson calls it "a contribution towards a bibliography of Economic Botany,' and in his preface he points out that it is only an extension of a list drawn up by two previous workers in the same field, so that he comes before us in this instance rather as an editor than as an author. Mr. Jackson has done most useful work before, in his 'Guide to the Literature of Botany,' and has undoubted ability for perfecting a work of this kind; so that we feel sorry he did not find himself justified in considerably increasing the bulk of the present volume and its consequent usefulness. No one knows this better than he does himself, for he refers more than once to the imperfect material that was put into his hands to start with, and to the fact that "a complete bibliography of Economic Botany would need the labour of years."

Though Mr. Jackson has undoubtedly produced a useful reference-book out of some untrustworthy materials, we wish he could have found time and patience—for a large share of both would have been needed—to have searched, verified, and cited the numerous volumes of the 'Gardeners' Chronicle,' 'Intellectual Observer,' 'Student,' 'Technologist,' 'Journal of Applied Science,' and others, even though, as he says, he could not confidently assert correctness in the statements given in the two last-named journals. We should have liked a full enumeration of the various papers on economic botany published in the series of journals edited by Sir W. J. Hooker; similarly we think such papers as those which Dr. Hance has contributed to these pages upon plants used in China should have found a place. On the other hand, many of those cited from the 'Pharmaceutical Journal' might well have been omitted.

We think Mr. Jackson has done right in excluding such subjects as silk and cochineal, because the ramifications of these are so wide that it would be difficult to decide where the line of Botany should be drawn: nor can we blame him for having excluded the bibliography of the vine, which "would require a lifetime for its compilation."

Of course it is not difficult to point out what would be considered omissions if the work were more pretentious than a "contribution" to the subject on which it treats. For instance, at p. 188, under "Shettell, George W.," the following might have been added, "Note on Caoutchouc obtained from *Chavannesia esculenta*. Rangoon: printed at the Government Press, 1874." Again, in the list of serials, the 'Technologist' is marked as "in progress," whereas it has ceased to exist since 1866.

We hope that at some future time Mr. Jackson will find leisure to largely augment the present volume, which belongs to a class of work for which he is peculiarly qualified. J. R. J.

Sylloge Fungorum omnium hucusque cognitorum. Digessit P. A. Saccardo. Pyrenomycetes, Vol. I., pp. xix., 766. Patavii: sumptibus auctoris typis Seminarii. 1882.

The first volume of this valuable contribution to mycological literature has just made its appearance. It consists of 766 pages of descriptive matter, including 2849 species of Pyrenomycetous fungi, and the second volume, completing the Pyrenomycetes, is promised during next year. The value of a work like the present consists mainly in collecting together from the Floras, and scattered Journals and Transactions, all described species, and arranging them in some order. Whether we agree as to the merits of the order adopted is a secondary consideration, and may be provided for by a copious Index. There can be but one opinion, however, that the bringing together of all described species in one work is worthy of allc ommendation. In so far as we have yet been able to test the present work, it appears to have been carefully compiled. There is, nevertheless, one omission, which seems to us important. There is no indication, under the various species, as to which have been seen or examined by the author, and which have not. Some such plan as that adopted by Fries, in his 'Hymenomycetes Europæi,' of appending a letter or two (v. v.) or (v. ic.) at the end of the diagnosis, would have added to the value of the work. As it stands, we have no evidence of what species Saccardo has himself seen and examined, and what he has not.

In a work of this kind the labour must be immense, and it would be ungracious to overlook the great advantages of such volumes and criticise the details too minutely. It can hardly be expected to be remunerative, so that at least we may do well to be grateful. With the completion of the second volume we trust that an exhaustive index will be forthcoming. A really good index to such a work is absolutely indispensable. The present volume contains the

- Perisporiaceæ—
  - Erysipheæ.
  - Perisporieæ.
  - Capnodieæ.
- Sphæriaceæ—
  - Allantosporæ.
  - Phæosporæ.
  - Hyalosporæ.
  - Hyalodidymæ.
  - Phæodidymæ.

The mention of these divisions of the *Sphæriaceæ* is sufficient to show that the arrangement is a purely artificial one, which cannot at the same time take account of natural affinities. It may be that such an arrangement has its advantages for a 'Sylloge'; whether so or not we see no reason to discuss the question now. Of course there are errors to be detected, the author himself would not expect otherwise; but hitherto we have recognised none of sufficient magnitude to interfere with the general value and utility of the work. We may, in passing, express some surprise that such genera as *Sporormia* and *Chætomium* should find place in the *Sphæriaceæ*, and not in the *Perisporiaceæ*.

The paper and typography are good, two points of no small importance in a work of constant reference. Experience only can fully appraise and appreciate its value. M. C. C.

Articles in Journals.—August.

Annales des Sciences Naturelles (Bot., Sér. 6, tom. xiii., Nos. 4–6, July).—A. Trécul, 'On the existence of large spiral cells in the parenchyma of the leaves of *Crinum*' (1 plate).—L. Mangin, 'On the development of spiral cells.' — R. Zeiller, 'On some fossil cuticles' (3 plates).—S. Berggren, 'On the prothallus and embryo of *Azolla*' (1 plate).—M. Treub, 'Observations on *Loranthaceæ*' (8 plates).—P. Sagot, 'Plants of French Guiana' (contd.)—W. C. Williamson and M. M. Hartog, 'On *Sigillaria* and *Lepidodendron*.' —E. Fremy, 'General mode of Analysis of Vegetable Tissue.'—E. Fremy and —. Urbain, 'Chemical Studies on the Vegetable Skeleton.'

Botanische Centralblatt.—C. Luerssen, 'Pteridological Notices' (contd.)—J. Klein, 'On *Vampyrella*' (4 plates).

Botanische Zeitung.—H. Hoffmann, 'Experiments in Cultivation and Variation.'—F. Schmitz, '*Phyllosiphon Arisari*.'—A. Meyer, 'On the Nature of Pringsheim's Hypochlorine Crystals.'

Bulletin of Torrey Botanical Club.—C. C. Parry, 'A New North American Rose' (*Rosa minutiflora*, Engelm.)—J. B. Ellis, 'New North American Fungi.'—G. E. Davenport, 'Fern Notes.'—F. L. Scribner, 'Grasses collected in Arizona and California' (contd.: *Sporobolus Wrightii*, Munro MS.)

Flora (May—July).—P. G. Strobl, 'Flora of the Nebrodes' (contd.)—M. Gandoger, 'Salices novæ' (concluded).—A. Winkler, 'On the young plants of *Dentaria pentaphylla*' (1 plate). — C. Kraus, 'On the course of the Sap in Plants' (contd.)—J. Müller, 'Lichenological Notes.' — F. Pax, 'Metamorphogenesis of the ovules of *Aquilegia*' (1 plate).—K. Goeld, 'On the antheridia of *Polytrichum*' (1 plate).

Journal of Linnean Society (Botany, vol. xix., No. 121).—C. Darwin, 'The Action of Carbonate of Ammonia on Chlorophyll-bodies.' —T. Kirk, 'Recent Additions to the New Zealand Flora.'—B. D. Jackson, 'On the Single Florets on the rootstock of *Catananche lutea*.' — C. B. Clarke, 'On Two Himalayan Ferns.' — Sir J. D. Hooker, 'On *Dyera*, a new genus of *Apocynaceæ*.' — J. G. Baker, 'On Ferns from the Solomon Islands' (*Asplenium ludens*, *Nephrodium hederæfolium*, *N. macrosorum*, *Gymnogramme Cominsii*, spp. nov.)—H. O. Forbes, 'On two new *Cyrtandreæ* (*Boea Treubii*, *Didymocarpus Schefferi*), and one wrongly referred (*D. minahassæ*)'—H. M. Ward, 'Researches on the Life-history of *Hemileia vastatrix*.'

Magyar Növéytani Lapok.—J. Schaarschmidt, 'Additamenta ad Phycologiam cott. Bihar et Krassó Szörény.'

Midland Naturalist.—J. E. Bagnall, 'Flora of Warwickshire' (contd.)—W. B. Grove, 'Fungi of Birmingham.'

Naturalist.—James Cash, 'On *Paludella squarrosa*.'

Œsterr. Bot. Zeitschrift.—S. S. von Müggenberg, 'Mycological Notes' (contd.)—F. Hofmann, 'On the Flora of Bosnia' (concluded). — P. Sintenis, 'Cyprus and its Flora' (contd.) — P. G. Strobl, 'Flora of Etna' (contd.)

Proceedings of Linnean Society of New South Wales (vol. vii., part 1).—J. E. Tenison-Woods, 'On various deposits of Fossil Plants in Queensland.'—W. Mitten, 'New species and localities of Polynesian Mosses' (*Distichophyllum capillatum*, Mitt., *Endotrichella pulchra*, Mitt., *Acanthocladium Strangei*, Mitt. & F. v. M., *A. pedunculatum*, Mitt., *Hypnodendron palmeum*, Mitt., *H. Chalmersii*, Mitt.) —C. Kalchbrenner, 'New Australian Fungi.'

Obituary.

The Rev. W. S. Hore, a Devonshire botanist who was well known among the British botanists of the last generation, and who died at Basingstoke in March last, demands some notice in these pages. In consequence of feeble health he spent the later years of his life in retirement at Barnstaple; but his cultivated mind, which was well stored with knowledge in various branches of natural history, rendered his company both entertaining and instructive, and consequently he was much valued by those persons who had the privilege of his personal acquaintance. He was born at Plymouth in the year 1808. His taste for natural history was developed while an undergraduate at Cambridge, and he could not fail to derive benefit from the acquaintance and friendship of the men of that time at Cambridge, such as Prof. Henslow, Prof. C. C. Babington, and Mr. Darwin; Prof. Babington graduated in the same year, and Mr. Darwin two years after. Mr. Hore held curacies successively at Saltash, in Cornwall; at Combmartin, in North Devon; several years at Stoke Damerel (Devonport), in South Devon; and at Norwich. He was subsequently, in 1850, preferred to the vicarage of St. Clement's, Oxford, and in 1855 to the living of Shebbear with Sheepwash, Devon. His places of residence being thus repeatedly shifted over diverse parts of England, he enjoyed and used good opportunities for extending his practical intimacy with his favourite branches of natural history. We find that, in 1841, when the British Association for the first time met at Plymouth, Mr. Hore contributed a "List of Plants found in Devonshire and Cornwall not mentioned by Jones in the 'Flora Devoniensis'"; this list was afterwards inserted in the 'Phytologist' (i., 160–163). In the same publication (vol. ii., pp. 239, 240) he gave a paper on the discovery of *Orobanche amethystea*, Thuill., at Whitsand Bay, in Cornwall. Mr. Hore's name cannot fail to be remembered by British botanists in connection with certain rare plants, as for example, *Trifolium Molinerii;* and his discovery of *Listera cordata* in North Devon, in 1843, is very interesting, as bearing on the local distribution of plants. The late Prof. Harvey, in 1855, dedicated to him the genus *Horea* among Algæ, and added the following words:—"The name is given in honour of Rev. W. S. Hore, of St. Clement's Oxford, an excellent algologist, and ardent and successful explorer of the Algæ of Plymouth Sound, &c., to whom I am indebted for large numbers of beautifully preserved specimens of rare British Algæ."

Original Articles.

SPICILEGIA FLORÆ SINENSIS: DIAGNOSES OF NEW, AND HABITATS OF RARE OR HITHERTO UNRECORDED, CHINESE PLANTS.

By H. F. Hance, Ph.D., Memb. Acad. Nat. Cur., &c., &c.

(Concluded from p. 261).

32. *Viburnum* (*Euviburnum, dentata, asiatica*) *tomentosum*, Thunb. —In prov. An-hwei, circa Wu-hu, Maio, 1881, leg. T. L. Bullock.

33. *Abelia chinensis*, R. Br.—In rupestribus ad angustias Yeung-tin, secus fl. Lien-chau, prov. Cantonensis, 290 m. p. a Cantone, d. 12. Oct. 1881, florentim legit rev. B. C. Henry. These specimens, the first I have seen in flower, show that my Amoy plant, named by the late Prof. v. Martius *A. Hanceana*, is identical. The flowers are white, with a faint blush of pink. I have compared the plant with the plate given opposite p. 376 of Abel's 'Narrative of a Journey into the Interior of China,' and R. Brown's description.

34. *Diervilla japonica*, DC.—In prov. An-hwei, prope Wu-hu, Maio 1881, leg. T. L. Bullock. I follow Asa Gray in reducing Lindley's *Weigela rosea* to De Candolle's species. The specimen is undistinguishable from a Japanese one received from M. Maximowicz as *D. versicolor*, Sieb. & Zucc.

35. Hedyotis (*Diplophragma*) longidens, sp. nov.—Fruticosa, passim scaberula, ramulis tenuibus teretibus, foliis oblongis margine revolutis acutiusculus basi attenuatis sessilibus v. subsessilibus pollicaribus nervis paucis inconspicuis arcuatis, stipulis e basi lata subulato-acuminatis integerrimis, floribus in cymas trichotomas circ. 20-floras satis densas ramulos terminantes dispositis breviter pedicellatis pentameris, bracteis bracteolisque linearibus, calycis breviter hispidi tubo globoso lobis linearibus apice dilatatis bilinealibus triplo breviore, corollæ hypocraterimorphæ extus glaberrimæ 6 lin. longæ tubo gracili cylindraceo intus piloso lobis glaberrimis recurvis, staminibus 5 apice tubo insertis glaberrimis corollæ lobis æquilongis antherarum loculis basi utrinque in denticulum productis, stylo exserto stigmate bifido, capsula in coccos 2 bipartibiles septicide dehiscente.

Circa oppidum I-chang, prov. Hu-peh, m. Junio 1880 invenit T. Watters. (Herb. propr. n. 21721.)

A curious plant, the true relationship of which has caused me some perplexity. I believe, however, notwithstanding its pentamerous flowers, and the very elongated calyx-teeth, that I have rightly estimated its position; and I think it is somewhat, though not very closely, allied to the Ceylon *H. cymosa*, Thw.! and probably still more so to the imperfectly known *H. scaberula*, Hook. fil. The seeds have all dropped out from my specimen, but the fruit is exactly that of *Diplophragma*.

36. *Leptodermis oblonga*, Bge.—In rupestribus juxta fauces Yeung-tin, secus fl. Lien-chau, prov. Cantonensis, 290 m. p. ab urbe, d. 12. Oct. 1881, coll. rev. B. C. Henry. Only previously known from the mountainous districts near Peking. The present specimens have ovate leaves, with a close but not raised reticulation beneath, and the stipules are shorter, not split up at the base, and are setaceously mucronate, as in all I have seen from the north; but there appear to be no trustworthy characters to separate them specifically.

37. VERNONIA (*Strobocalyx*) GRATIOSA, sp. nov.—Suffruticosa, diffusa, et forte subscandens, ramulis subteretibus, ferrugineo-cinereo-tomentosis, foliis membranaceis lanceolatis v. lanceolato-oblongis acuminatis margine paucidenticulatis supra parcius tomentosis demum glabratis lucidulis subtus tomento denso viridi-cinerascenti tectis 3–4 poll. longis pollicem latis petiolo 2–3 lineali, floribus in paniculam compositam amplam e paniculis foliatis axillaribus erecto-patentibus folium æquantibus conflatam digestis, capitulis circ. 10–12-floris, involucri campanulati trilinealis squamis exterioribus ovatis obtusiusculis dorso calvis marginibus dense ochraceo-tomentosis interioribus linearibus acutis præter apicem tomentosam glaberrimis, flosculis purpureis, achænio callo conspicuo insidente immaturo striatulo secus costulas scabrido, pappi involucrum subduplo superantis ochroleuci setis exterioribus abbreviatis.

In umbrosis ins. Formosæ, juxta oppidum Tam-sui, sub initio m. Januarii 1882, invenit am. T. Watters. (Herb. propr. n. 21947.)

A very pretty, profusely flowering plant, most closely related, I think, to *V. solanifolia*, Benth., but readily distiguished by the foliage and inflorescence, the difference in shape of the involucre, and the form and vestiture of the involucre-scales. The achænia are too unripe for proper examination.

38. *Doronicum longifolium*, DC., var.?—Ad lacum Ko-ko-nor, a. 1881, leg. W. Mesny. No radical leaves were gathered; the cauline are linear and semiamplexicaul, the involucre, base of the ligules and immature achene all perfectly smooth.

39. *Senecio Oldhamianus*, Maxim.—In prov. Sz-ch'uan, a. 1881, leg. E. H. Parker.

40. *Senecio* (*Ligularia*) *japonica*, Sch.-Bip.—Juxta pagum Saingau, secus fl. Lien-chau, prov. Cantonensis, 210 m. p. a. metropoli. d. 5. Oct. 1881, leg. rev. B. C. Henry. Not, I think, heretofore known except from Japan.

41. *Arctium majus*, Schk.—In prov. Sz-ch'uan, a. 1881 leg. E. H. Parker; in Ko-ko-nor, a. 1881, coll. W. Mesny.

42. STATICE (*Limonium, Plathymenium, rhodanthæ*) VARIA, sp. nov.—Robusta, glaberrima, basi lignosa, foliis . . . . ? scapo erecto ramosissimo flexuoso 1½ pedali, ramulis subteretibus squamis

caulinis minutis ovatis albo-scariosis, spiculis 3-floris secus ramulos in paniculas subsecundas amplas laxiusculas fastigiatim corymbosas dispositis, bracteis oblique truncatis membranaceis albis medio brunneis, calycis tenerrime membranacei albi lineam longi tubo lineis 5 brunneis notato, limbi plicati dentibus ovatis acutiusculis, corollæ bilinealis tubo flavido lobis violaceis rotundatis.

Ad lacum Ko-ko-nor, a. 1881, leg. W. Mesny. (Herb. propr. n. 22015).

A very distinct species, much more robust than *S. tenella*, Turcz.! or *S. leptoloba*, Regel! Though the flowers are so small, their great abundance, and the striking contrast between the white shining bracts and calyx and the violet corolla (which as far as I can make out is gamopetalous), render it one of the loveliest species known to me.

43. *Statice* (*Limonium*, *Plathymenium*, *chrysanthæ*) *aurea*, Linn.—In Ko-ko-nor, a. 1881, leg. W. Mesny. A very beautiful species, more delicate than *S. Schrenckiana*, Fisch. & Mey.! and with bright lemon-yellow flowers.

In the 'Prodromus,' M. Boissier lays stress on some of the sections into which he has divided this genus having the corolla after flowering "corculata." I have been unable to discover what meaning M. Boissier attaches to this word, which is not classical (not to be found in Forcellini, Ainsworth, Smith or Lewis & Short), nor apparently belonging to the Lower Latinity (it is absent from Maigne d'Arnis' 'Lexicon manuale,' a compendium based on Ducange's great work, and also from Quicherat's 'Addenda Lexicis latinis'); whilst no such botanical term is mentioned in the glossaries in Lindley's 'Introduction' or 'Elements,' in Germain de St. Pierre's 'Dictionnaire,' or in the still more ambitious one of Baillon.

44. *Lysimachia clethroides*, Duby.—In prov. Sz-ch'uan, a. 1881, leg. cl. E. H. Parker. An addition to the flora of China Proper. The specimen agrees entirely with Manchurian ones.

45. *Glaux maritima*, Linn.—Circa urbem Ha-mi, Turkestaniæ chinensis, m. Maio 1881, leg. W. Mesny.

46. LIGUSTRUM MOLLICULUM, sp. nov.—Ramis teretibus pubentibus, ramulis annotinis subtetragonis molliter cinereo-tomentosis, foliis flaccidis oblongis basi obtusis apice acutis mucronatis supra sparsim pilosulis subtus præcipue secus nervos tomentosis $3\frac{1}{2}$ poll. longis $1\frac{1}{4}$ poll. latis petiolo $1\frac{1}{4}$ lineali tomentoso, inflorescentiæ spiciformis $1\frac{1}{2}$ poll. longæ cymulis geminatis 3–15 floris pedunculatis bracteis linearibus setaceo-acuminatis flores adæquantibus stipatis, calycibus cyathiformibus breviter 4-denticulatis tomentosis, corollæ extus tomentosæ intus glaberrimæ tubo infundibulari calycem 4-plo superante laciniis oblongis erectis, staminibus paulo infra faucem insertis antheris ovatis apiculatis lacinias adæquantibus, stylo mediam corollam adtingente.

Juxta urbem Wu-hu, prov. An-hwei, Maio 1881, leg. T. L. Bullock. (Herb. propr. n. 22003.)

This is undoubtedly quite distinct from any of the species described in the carefully executed monograph of Professor Decaisne

(Nouv. Arch. du Muséum, i. 1.), to whose kindness I am indebted for a valuable series of named specimens. It is probably most closely allied to *L. Tchonoskii*, Dcne., which I have never seen.

47. *Convolvulus* (*Orythocaulos*) *Ammanni*, Desrouss.—In siccis planitiei mongolicæ, Sept. 1867, coll. Dr. S. W. Williams; in prov. Chih-li, juxta fines orientales prov. Shan-si, æst. 1872, leg. rev. J. Pierson; prope lacum Ko-ko-nor, a. 1881, coll. W. Mesny.

48. MAZUS CADUCIFER, sp. nov.—Estolonosus? pilis brevibus articulatis tomentellis, foliis obovatis v. oblongis basi cuneatim angustatis grosse et inæqualiter sinuato-dentatis v. lobatis obtusis 3–3½ poll. longis, caule a basi fere florenti, racemo stricto virgato 14–15 pollicari circ. 50-floro, floribus erectis pedicello calyci æquilongo basi bractea parva setacea sphacelata stipato fultis ebracteolatis, calycis 5-linealis valide costulati laciniis lanceolatis acutis tubum æquantibus, corollæ calycem duplo superantis labio superiore bicuspidato inferiori æquilongo, capsula parva globosa pubescente, seminibus ovoideis pallidis.

In prov. An-hwei, juxta urbem Wu-hu, m. Maio 1881, coll. am. T. L. Bullock. (Herb. propr. n. 21825.)

A most interesting species, very distinct in habit, owing to its narrow, strict, rod-like, many-flowered raceme, and also different from the few others hitherto known by the elongated upper lip of the corolla.

49. *Phtheirospermum chinense*, Bge.—Juxta pagano Sai-ngan, secus fl. Lien-chau, 210 m. p. ab urbe Cantone, d. 5. Oct. 1881, coll. rev. B. C. Henry. Only known previously from the north of the empire, and from Japan.

50. *Pedicularis* (*Longirostres, siphonanthæ*)? *muscicola*, Maxim.—Juxta lacum Ko-ko-nor, a. 1881, leg. W. Mesny.

51. *Pedicularis* (*Longirostres, siphonanthæ*), sp. nov.—Floribus luteis iis *P. chinensis*, Maxim. aspectu simillimis, sed planta acaulis videtur, corollæque tubus bipollicaris, glaberrimus. Ad lacum Ko-ko-nor, a. 1881, coll. Mesny.

52. *Elsholtzia* (*Euelsholtzia*) *cristata*, Wild.—In prov. Cantonensi, secus fl. Lien-chau, 235 m. p. ab urbe, d. 8. Octobris 1881, leg. rev. B. C. Henry. I have no other specimens from Southern China.

53. *Dracocephalum* (*Boguldea*) *nodulosum*, Rupr.—Ad lacum Ko-ko-nor, a. 1881, leg. W. Mesny. The upper tooth of the calyx is less wide, and the corolla, which I should suppose to be cream-coloured, fully an inch long, but otherwise it agrees well with a Turkestan specimen gathered by Kuschakewicz.

54. STACHYS (*Stachyotypus, elatæ*) MODICA, sp. nov.—Herbacea, erecta, caulibus retrorsum pilosulis, foliis subsessilibus anguste oblongis basi subcordatis v. obtusis apice acutiusculis crenatis utrinque pilosus floralibus calyces adæquantibus, verticillastris discretis 6–15 floris in racemum 4–6-pollicarem digestis, calycis campanulati pilosi dentibus erectis spinosis, corollæ sparsim hirtellæ calyce duplo longioris tubo breviter exserto.

In prov. Sz-ch'uan, a. 1881, leg. E. H. Parker; circa Wu-hu, prov. An-hwei, Maio 1881, coll. Bullock. (Herb. propr. n. 21916.)

Nearest to the American *S. hyssopifolia*, Mx.! which it resembles

in the shape of its larger leaves, but differs by their crenature and hairiness, and also by the more numerously flowered verticillasters and spinous erect calyx-teeth.

55. *Polygonum* (*Pleuropterus*) *multiflorum*, Thunb.—Juxta pagum Sai-ngau, ad fl. Lien-chau, prov. Cantonensis, d. 5, Oct. 1881, leg. rev. B. C. Henry. I have not seen this before from anywhere in China, except Chin-kiang, in Kiang-su province, about 500 miles north of the present station.

56. *Asarum Blumei*, Dchrtre.—In collibus regionis septentr. prov. Che-kiang, juxta Mei-chi, ad austrum lacus Ta-hu, d. 16 Aprilis 1881, legg. Forbes et Carles. The leaves are in outline more like those of *A. Sieboldi*, Miq., than of an authentic Japanese specimen of this species; but the structure of the flowers, which are also smaller, appears to be that of *A. Blumei*, to which Mr. Forbes referred it. Now, I believe, for the first time recorded from China.

57. *Daphne* (*Daphnanthes*) *odora*, Thunb.—Circa Tam-sui, ins. Formosæ, m. Febr. 1882, invenit T. Watters.

58. *Mallotus barbatus*, Müll. Arg.—In prov. Sz-ch'uan, a. 1881, invenit E. H. Parker. Not hitherto met with in China. Quite similar to a Singapore specimen in my herbarium.

59. MALLOTUS CONTUBERNALIS, sp. nov. — Frutescens, ramulis ferrugineo- v. fulvo-pubentibus, foliis alternis ovatis basi obtusis v. nunc brevissime peltatis apice acutis raro et fere obsolete denticulatis triplinerviis luci obversis creberrime pellucido-glandulosis primum utrinque densius fulvo-pubentibus demum plus minus glabratis supra punctulis minutis albidis subtus glandulis flavis conspersis 2–3 poll. longis 1–1¾ poll. latis petiolo ¾-pollicari, racemis plurimis ramulos terminantibus multifloris, capsulis dicoccis compresso-sphæricis 4 lin. altis 6 lin. latis dense rufo-furfuraceo-glandulosis, seminibus piceis diametro 3-lineali.

In silvis circa monasterium, ad Ting-ü-shan, secus fl. West River, prov. Cantonensis, d. 17 Julii 1872, legg. Sampson et Hance; in prov. Sz-ch'uan, æstate 1881, iterum invenit E. H. Parker. (Herb. propr. n. 17694.)

Very closely allied to *M. repandus*, Müll. Arg.! from which it differs in its strictly ovate, not rhomboid, leaves, with much shorter petioles, the stouter rachis of the inflorescence, the larger more compressed capsules, more densely clothed with deep rufous glandular tomentum, and the larger seeds. I have not seen the male inflorescence.

60. *Humulus Lupulus*, Linn., var. *cordifolius*, Maxim.?—Mas. caule inflorescentiaque retrorsum aculeolatis pilosisque, foliis summis (quæ tantum suppetunt) cordato-lanceolatis lobulo basilari sæpius utrinque auctis acuminatis supra verrucis albis scabris crebre obsitis subtus glandulis luteis densissimis tectis petiolo subtriplo longioribus, paniculæ laxiusculæ ramulis tenuiter filiformibus erectiusculis, floribus quam in specie typica europæa subduplo minoribus.

Juxta pagum San-tui, secus fl. Lien-chau, prov. Cantonensis, 230 m. p. a Cantone, d. 8 Oct. 1881, leg. rev. B. C. Henry.

This seems to accord very well with Miquel's character of his *H. cordifolius*, of which he only had female specimens, whilst I only possess male ones, and those very imperfect. Maximowicz without hesitation refers this to *H. Lupulus* (Franch. & Savat. Enum. pl. jap. 409), from which, however, the Chinese plant certainly looks to me distinct.

61. BROUSSONETIA MONOICA, sp. nov.—Ramulis flexuosis castaneopurpureis tenuiter striatis glaberrimis, foliis ovatis cuspidato-acuminatis serratis supra sparsim hirtis subtus tomentosis breviter petiolatis, floribus monoicis, spica mascula unica ad basin innovationum sita deflexa 3–3½ lin. diametro pedunculo subæquilongo fulto, capitulis femineis 3–4 secus innovationes axillaribus erecto-patentibus 2 lin. diametro pedunculis æquilongis.

Secus fl. Lien-chau, prov. Cantonensis, m. Martio 1881, coll. rev. B. C. Henry. (Herb. propr. n. 21933.)

No monœcious species of *Broussonetia* has been hitherto described; but the present interesting plant undoubtedly belongs to the genus, and is so exceedingly like *B. Kæmpferi*, Sieb. (with authentic specimens of which, from the Leiden Museum, I have compared it), that I can only distinguish it by its monœcious inflorescence, by the young leaves (which I have alone seen) being more downy beneath and with a less marked reticulation, and by the rather smaller heads of flowers, the male ones refracted and rounder. Can it be a *lusus* of this?

62. PILEA (*integrifoliæ*) CRASSIFOLIA, sp. nov.—Herbacea, glaberrima, monoica, caulibus prostratis longe repentibus filiformibus ramos erectos edentibus, foliis æquimagnis orbicularibus subenerviis in vivo (*Dischidiarum* adinstar) crassis carnosis lenticularibus siccatis planis crustaceis cystolithis magnis linearibus intricatis conspicuis farctis 3–4 lin. diametro petiolo lineali, cymulis sessilibus petiolum parum superantibus.

In rupestribus prov. Cantonensis, secus fl. Lien-chau, m. Martio 1881, coll. rev. B. C. Henry. (Herb. propr. n. 21712.)

Quite distinct in habit and the consistence of the foliage from *P. peploides*, Hook. & Arn., and *P. peltata*, Hance, the only other South Chinese species hitherto known.

63. *Quercus Fabri*, Hance.—Secus fl. Lien-chau, in collibus juxta pagum Ma-po-shui, 340 m. p. a Cantone, d. 26 Oct. 1881, leg. rev. B. C. Henry. I have never before seen specimens of this from any locality south of the northern portion of Kiang-si. In Kwang-tung it is a low scrubby bush.

64. *Quercus annulata*, Sm.—In silvula juxta fl. Lien-chau, 309 m. p. a Cantone, d. 19 Oct. 1881, leg. rev. B. C. Henry. Fo-kien and Che-kiang are the only Chinese provinces from which I had hitherto received this beautiful oak.

65. *Quercus sclerophylla*, Lindl.—Juxta pagum Ma-po-shui, ad ripas fl. Lien-chau, coll. rev. B. C. Henry, d. 26 Oct. 1881. Like the preceding, only previously known to me from the two provinces just mentioned.

66. SALIX CYANOLIMENÆA, sp. nov. — Ramulis cinerascenti-brunneis striatulis, foliis brevissime petiolatis linearibus calloso-

mucronatis leviter remote glanduloso-denticulatis 1–1½ poll. longis 1¾ lin. latis inconspicue nervosis glaucescentibus utrinque adpresse sericeis, stipulis deciduis, amentis femineis 2–3-foliatis brevibus densis erectiusculis rachi villosa, squamis ovato-lanceolatis acutis glabris brunneis persistentibus, nectario parvo apice sphacelato, capsulis sessilibus lageniformibus stramineis glaberrimis, stylo subnullo cum stigmatibus crassiusculis divaricatis bipartitis rubenti-castaneis.

Ad lacum Ko-ko-nor, a. 1881, leg. W. Mesny. (Herb. propr. n. 22009.)

I have not seen the male flowers of this very elegant species, but the persistence of the bracts, even after the dehiscence of the capsules, apparently indicates that it belongs to Andersson's group of *Pleiandræ triandræ*. It looks very different from any species in my herbarium.

67. *Ephedra vulgaris*, Rich.—Ad lacum Ko-ko-nor, a. 1881, leg. W. Mesny.

68. *Iris Grysii*, Maxim.—Juxta Wu-hu, prov. An-hwei, Maio 1881, leg. Bullock. Flowers pale blue, according to the collector.

69. *Aletris japonica*, Lamb.—In ripis humidis, prope Tam-sui, ins. Formosæ, Apr. 1864, leg. Oldham; in prov. An-hwei, juxta urben Wu-hu, m. Maio 1881, leg. T. L. Bullock.

70. *Stipa inebrians*, Hance.—Ad lacum Ko-ko-nor, a. 1881, leg. W. Mesny. The late Gen. Munro considered this to belong rather to *Lasiagrostis* than to *Stipa*: as I pointed out when describing it, the awn in the opening florets is straight, but it is quite as much twisted as usual in *Stipa* in mature specimens. It is with no ordinary satisfaction that I find the unrivalled systematist whose ability both in synthesis and analysis, whose masterly grasp of his subject, age seems powerless to impair, has, in a recent most instructive paper on the classification of Grasses (Journ. Linn. Soc. xix. 80) sustained the view expressed by me six years ago (Journ. Bot. xiv. 1876, 212), that neither *Lasiagrostis*, *Ptilagrostis*, *Macrochloa*, nor *Aristella* can be kept apart from *Stipa*. I may add that I have been able to compare *S. inebrians* with authentic specimens of *Lasiagrostis Caragana*, Trin., and find them quite different.

71. *Melica scabrosa*, Trin.—In prov. Sz-ch'uan, a. 1881, legit E. H. Parker.

72. *Bromus japonicus*, Thunb.—In prov. Sz-ch'uan, a. 1881, leg. E. H. Parker.

73. *Cheilanthes farinosa*, Kaulf.—In jugo Lo-fau-shan (h. e. montes Tigridum), prov. Cantonensis, m. Junio 1881, leg. rev. B. C. Henry. The specimens are not typical, having fewer pinnules than either those from Ceylon, the Himalayas, or West Africa, which I possess, though they are not unlike Cuming's Philippine ones; and I at first, with a strong expression of dissent from Mr. Henry, referred them to *C. argentea*, Kze. But I have since seen the two, as gathered by him, growing side by side in pots, and I cannot believe them conspecific. Indeed, I have never seen any specimen of true *C. argentea* with two to four pairs of free

pinnæ, an inch to half an inch apart, or with a similar outline. The Chinese plant, though having the under surface of the frond white, most nearly resembles tab. 95, fig. 1 of Sir William Hooker's 'Filices exoticæ,' given as *C. argentea*, var. *chrysophylla*, which I regard, with Messrs. Clarke, Atkinson, and Henderson (Trans. Linn. Soc. ser. 2, i. 458), as certainly more nearly allied to *C. farinosa* than to *C. argentea*, all the Chinese specimens of which latter are very similar. A Khasia plant given me by Prof. Reichenbach as *C. chrysophylla* is exactly like fig. 2 left-hand specimen, of the plant above referred to, and is, I suppose, a form of *C. argentea*. The late Dr. Milde seems to have considered both of the above forms as referable to *C. farinosa* (Fil. Europ. &c. 38). Since the above was written, Mr. Henry has given me thoroughly typical specimens of *C. farinosa* from Fei-loi-tsz.

74. *Asplenium cœnobiale*, Hance.—Secus fl. North River, prov. Cantonensis, m. Jan. 1879, leg. Dr. C. Gerlach. These are the specimens on which Mr. Baker founded his *A. fuscipes;* which, however, proves on comparison in all respects identical with my fern from the West River, described five years previously.

75. *Aspidium obliquum*, Don.—Secus fl. Lien-chau, prov. Cantonensis, m. Martio 1881, detexit rev. B. C. Henry. The only Chinese specimens I have seen.

76. *A. intermedium*, Bl.—In prov. Cantonensis, secus fl. Lien-chau, Martio 1881, coll. rev. B. C. Henry. Very fine specimens indeed; the first I have examined from any part of China.

77. *Cyathea spinulosa*, Wall.—In declivibus occasum spectantibus jugi Lo-fau-shan, h. e. "montes tigridum," prov. Cantonensis, alt. 20 pedum adtingentem, m. Novembri 1880, primus detexit Dr. C. Gerlach. Only found hitherto in Nipal and the Jaintea hills, and in the island of Usima, South Japan; if, indeed, the plant from the latter locality be correctly determined. The Chinese specimens appear really referable to this species, as recently discussed in a very masterly paper on the Ferns of Northern India, by Mr. C. B. Clarke (Trans. Linn. Soc,, 2nd ser. i. 429, t. 49, f. 1).

78. *Physcomitrium eurystomum*, Sendtn.—In muris, Whampoæ, primum legit carissima uxor, m. Martio 1880. Determination by M. Bescherelle, confirmed by Dr. Braithwaite.

79. *Arthrocardia corymbosa*, Aresch.—In rupibus maritimis ad Ki-lung, oræ borealis ins. Formosæ, exeunte Januario 1882, leg. T. Watters. I fail to see any difference between this and a New Zealand specimen received from the late Prof. Harvey, except that his belongs to Agardh's var. α, and this to β. Its occurrence in Formosa, exactly 25° north of the equator, is remarkable, as the usual South African locality is in about 32° south latitude; and J. G. Agardh states (Spec. Alg. ii. 2, 549) that no species of *Arthrocardia*, except the little known *A. frondescens*, J. G. Ag., which is perhaps not congeneric, has hitherto been found in the northern hemisphere.

ON THE CAULOTAXIS OF BRITISH GERANIUMS.

By Thomas Hick, B.A., B.Sc.

Perhaps it need hardly be said that the term caulotaxis is used here in a sense analogous to that in which the words "phyllotaxis" and "anthotaxis" or "inflorescence," have long been employed by botanists. The arrangement and relation of the central and lateral axes of a plant are matters of some morphological importance, and for these the term caulotaxis will be found at once definite and convenient.

The caulotaxis of the Geraniums varies in different species, and occasionally even in the same species, the modifications met with in the genus as a whole sometimes presenting themselves within the limits of a single species. In this attempt to elucidate its essential features, it will be convenient to begin with what is perhaps the commonest form, viz., *G. Robertianum*. As I write, a shoot of this, collected quite casually, lies before me, and presents the following organisation:—

The lowest node present on the specimen bears two leaves, which are placed opposite one another. In the axil of the left of these leaves, as the specimen lies, is a lateral branch. But between this lateral branch and what appears to be the main axis of the specimen is a peduncle bearing two flowers. At the next higher node there are also two opposite leaves, and in the axil of the right is a lateral branch. Further, between this lateral branch and the apparent main axis, there is, as before, a peduncle bearing two flowers. These characters are repeated at successive nodes, except at the highest. Here there are two opposite leaves, with a lateral branch in the axil of the left only, and the main axis of the shoot runs directly forward and forms the common peduncle of two flowers.

This arrangement of leaves, central and lateral axes, and flowers, may be easily represented diagrammatically, as in Fig. 1. That the arrangement is not an accidental one, the examination of a few specimens gathered at random will abundantly prove.

Very little consideration is needed to show that the caulotaxis described is of a very interesting character. The position of the flowers between what is apparently the main axis of the plant and an axillary branch, will at once strike the eye as a peculiarity, especially when viewed in connection with the terminal peduncle at the highest node. But in this peculiarity we have the key to the whole arrangement, for by its aid there is little difficulty in making out that at the nodes, as well as at the apex of the stem, the two-flowered peduncle is in reality a terminal structure. Thus the peduncle met with at any node is a direct continuation of that part of the main axis which forms the internode below. The lateral shoot between the peduncle and the leaf on one side is an ordinary branch developed in the axil of that leaf in a normal manner, and presenting no noteworthy peculiarities. But what appears to be part of the main axis on the other side of the peduncle is likewise a lateral branch, developed in the axil of a leaf, but having from the first a more vigorous growth than its fellow on the opposite side, and much more than the parent axis from which it springs. This branch, besides growing more vigorously than the other, sets itself more or less closely in a line with the internode below, and as a consequence becomes part of the pseud-axis of the plant, and the parent axis, with the flowers, is pushed into a lateral position.

Incorporating this view of the caulotaxis with the features of it already described, we may reconstruct the shoot diagrammatically, as in Fig. 2. Thus the lowest part of the central axis (*a*) bears at the first node two leaves, and then runs out into an apparently lateral peduncle (*d*). In the axils of the leaves lateral branches are produced in a normal fashion, but there is a marked difference between them. One (*b*) remains permanently in the condition and with the appearance of a subordinate branch; but the other (*c*) outgrows this both in length and stoutness, and, setting itself in a line with the internode below, pushes its parent axis (*d*) over into a lateral position, as already stated.

The other nodes and internodes having a similar organisation and origin, it seems clear that what appears to be the main axis of a shoot of this plant is merely a pseud-axis, formed from the lower portions of successively developed lateral axes. But there is a difficulty in classifying this form of caulotaxis with any of those described by such authorities as Sachs ('Lehrbuch,' pp. 180–184), and Nageli ('Das Microscop,' pp. 612–623). The caulotaxis is obviously cymose, but it can hardly be termed a dichasium, seeing that the lateral branches do not develop equally, and that the alternate ones become organised into a pseud-axis. Perhaps, without doing much violence to the terms, it may be called a pseud-axial dichasium.

Occasional specimens of *G. Robertianum* present modifications of this caulotaxis, which are both interesting and significant. One or two of these may be noticed.

If a large number of shoots be examined, some will probably be found in which the development of the two-flowered peduncle at the lower nodes has been arrested. It is seldom that more than one or two nodes on an axis exhibit this appearance, but where it does occur, the absent peduncle is usually represented by a central bud between the lateral branches. Very frequently, also, one of the leaves at each node is much smaller than the other, and the branches in the axils of the smaller leaves are but slightly developed, or remain in the condition of a bud. When this phenomenon presents itself the smaller leaves of successive nodes are placed alternately on the pseud-axis. As an extreme case of this, it may be mentioned that specimens are occasionally met with in which only one leaf is present at the highest nodes, *viz.*, the one opposite to the peduncle.

It will now be interesting to compare the caulotaxis of other species with that of *G. Robertianum.*

In *G. pratense* the leaves are opposite, and each bears a lateral branch in its axil. There is little difference, however, between these branches as regards vigour of growth, and as they diverge at nearly equal angles from the central axis, especially at the lower nodes, the caulotaxis is practically a dichasium. In some cases the lower nodes are destitute of a central prolongation of the internode below, but the middle and higher ones usually have a two-flowered peduncle in the fork between the lateral branches. When the central peduncle is absent, a reminiscence of it usually exists in an undeveloped central bud.

G. sylvaticum, *G. pyrenaicum*, and *G. rotundifolium* have a caulotaxis which fluctuates a little, but in the main agrees with that of *G. pratense*, and approaches more or less closely to a true dichasium. The departure from this, which these species sometimes present, always shows itself in a tendency towards the formation of a pseud-axis, owing to a slight accentuation of the differences between the lateral shoots produced at each node.

G. dissectum conforms to the type of *G. Robertianum*, The central peduncle is usually present at every node, both lateral branches are developed, and a distinct pseud-axis is organised. Of the same type is the caulotaxis of *G. lucidum*.

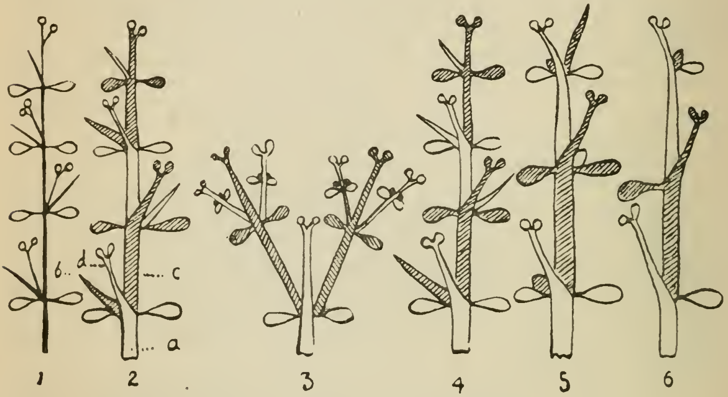
In *G. sanguineum* and *G. columbinum* the caulotaxis exhibits a higher degree of divergence from the dichasial type than even *G. Robertianum.* The axillary branches at the lower nodes are both developed,—one stouter than the other and taking part in the formation of a well-marked pseud-axis,—but at the upper nodes one branch often remains undeveloped, so that the peduncles at these points often appear to be axillary. In most cases hitherto examined, however, a bud has been found to occupy the position of the absent branch.

But the most peculiar form assumed by the caulotaxis of the Geraniums is that presented by *G. molle.* In this species there is only one leaf at the majority of the nodes, and the two-flowered peduncles are thus generally leaf-opposed—an arrangement which would be very perplexing did this species stand alone. If, however, its caulotaxis be interpreted by the light of the facts brought forward in what has preceded, it will hardly seem an unwarrantable hypothesis that in *G. molle* the peduncles are terminal as in all the other species, and that at each node one leaf, with its axillary branch, has been completely suppressed; in other words, that the caulotaxis is of that form which has been designated a cicinal cyme.

G. pusillum appears to be rather more variable than the other species, sometimes approaching to the type of *G. columbinum*, and at others to that of *G. molle*, especially at the higher nodes.

Taking then the whole genus of British Geraniums, it will be seen that four types of caulotaxis are distinguishable, *viz.*, those of *G. pratense*, *G. Robertianum*, *G. columbinum* or *sanguineum*, and *G. molle* respectively, No doubt these types pass more or less gradually into one another, and individual species do not invariably and entirely conform to one type. But in the great majority of specimens examined during the preparation of this paper, not only did the species named remain true to their respective types, but even the intermediate species fell in between them in an order that, within certain limits, was more uniform than could have been expected. Now if good specimens of the four species named be selected and compared with one another, it will be seen that they exhibit a well-marked gradation of forms, which pass from the almost true dichasium of *G. pratense* to the cicinal cyme of *G. molle*. Moreover, if, as may easily be done, the remaining British species be intercalated between these, we shall have a complete view of of the successive steps by which the transition has been effected.

It is unnecessary to give illustrations of all the species, but the appended diagrammatic figures of the four typical forms (Figs. 3, 4, 5, 6) may help to give clearness to what has been said.



Explanation of Figures.

Fig. 1.	Empirical diagrammatic view of		*G. Robertianum.*
2.	Rational	do.	do.
3.	Rational	do.	*G. pratense.*
4.	Rational	do.	*G. Robertianum.*
5.	Rational	do.	*G. columbinum.*
6.	Rational	do.	*G. molle.*

NOTES ON BRITISH *DESMIDIEÆ.*

By W. Joshua, F.L.S.

The following species have this year come under my own observation more or less abundantly in a state of conjugation with their zygospores, among Algæ collected in various parts of the British Islands. The occurence of zygospores in so many species, considerably above the number recorded by Ralfs, and in some but very rarely found in that state of development, is possibly attributable to the high condition of temperature during the winter and early spring months. One species, *Penium phymatosporum*, has not been previously recorded as British.

Closterium Kutzingii, Breb.—Goole, Yorkshire.

C. calosporum, Wittr.—One example only; among other Desmids from Aberdeenshire.

C. acutum, Lyngb.—Rain-water pool, Driffield Woods, near Cirencester.

C. gracile, Breb.—Penzance.

C. subulatum, Kütz.

C. intermedium, Ralfs.—Abundantly conjugated with other Algæ, Fyvie, Aberdeenshire. Zygospores rare.

C. moniliferum, Bory.—Cirencester.

C. Leibleinii, Kütz.—Cornwall.

C. rostratum, Ehr.—Devonshire.

C. cornu, Ehr.—Minety, Wilts.

Micrasterias Thomasiana, Archer.—Fyvie, Aberdeenshire. Zygospore globose; spines forked; resembling that of *M. denticulata;* one specimen only. The first instance of its occurrence.

Gonatozygon Brebissonii, De Bary—Tudmoor, Cirencester.

Sphærozosma excavatum, Ralfs.—Hulgarvon Moor, Bodmin.

Hyalotheca dissiliens, Sm.—Goole, Yorkshire; also, curiously conjugated in filaments, after the manner of *Didymoprium Borreri*, Fyvie, Aberdeenshire.

Euastrum elegans, Breb.—Large form; typical. Minety, Wilts.

E. oblongum, Grev.—Minety, Wilts.

E. ansatum, Ehr.—Aberdeenshire.

E. decedens, Reinsch.—Minety, Wilts.

Cosmarium tetraopthalmum, Breb.—Small form. Cirencester.

C. bioculatum, Breb.—Cirencester.

C. Meneghinii, Breb.—Driffield Woods, Cirencester.

C. corbula, Breb.—Driffield.

C. truncatellum, Perty.—Fyvie, Aberdeenshire. Zygospore distinguished from that of *C. pygmæum*, Arch. (which the plant somewhat resembles), by its minute hair-like spines.

C. melanosporum, Arch.—Cornwall. (Not yet described).

C. tinctum, Ralfs and *C. margaritiferum*, Ralfs. Penzance, Tremethic Moor.

C. Brebissonii, Menegh.—Tremethic Moor, Penzance.

Staurastrum muticum, Breb.—Penzance.

S. asperum, Breb.—Bodmin.

S. pterosporum, Lund.—Penzance, Aberdeenshire. Distinguished from *S. O'Mearii*, Arch, by its quadrate zygospore.

S. dejectum, Breb.—Cornwall; Aberdeenshire.

S. dejectum, Breb., *β. apiculatum*, Breb.—Penzance.

S. pygmæum, Arch.—Bodmin.

S. Dickiei, Ralfs.—Penzance.

Tetmemorus granulatus, Ralfs.—Fyvie.

T. lævis, Kirby.—Minety, Wilts.

Penium minutissimum, Reinsch.—Banchory, J. Roy.

Cylindrocystis diplospora.—Small form. Dalbrake. Banchory, J. Roy.

C. Brebissoni, Menegh.—Cornwall.

Penium phymatosporum, Nords., 'Desm. et Œdog. ab O. Nordstedt in Italia et Tyrolia collectæ,' t. xii., f. 1.—Species new to Britain. Minety, Wilts.

Spirotænia obscura, Ralfs.—Penzance; sparingly. Not before recorded.

In some Algæ received from Mr. A. W. Wills, from Capel Curig, N. Wales, the zygospores of *Zanthidium armatum* were abundant.

The following, collected at Slewdrum Bog, Aberdeenshire, I received through the kindness of my friend Mr. J. Roy.

Didymoprium Borreri, Ralfs.
Gonatozygon Ralfsii, De Bary.
Euastrum pectinatum, Breb.

ON THE EUROPEAN SPECIES OF *FESTUCA*.*

By F. Townsend, M.A., F.L.S.

(Concluded from p. 281.)

B.—Of Degree (Grad) in Species-making, Variation, Culture, Hybrids, Systematic Arrangement, and Nomenclature.

Prof. Hackel describes how, whilst pursuing his study of the genus *Festuca*, he came by degrees to the conclusion that Jordanic species have no existence in Nature, but that such species consist of groups of individuals which resemble each other more closely than those of another immediately-allied group. Nor does he believe in the existence of an absolute species, but considers that the word must always have a relative signification. He describes how he saw three ways open to him—1st, to look upon all distinguishable and recognisable forms as species, and to collect the minor species into groups which should be equal in rank to the more distinct and isolated species; 2ndly, to look upon all forms as species, but to divide them into species of 1st, 2nd, 3rd, and 4th rank, as Focke has done with the *Rubi*, in which case the word species must cease to express a logical meaning; or 3rdly, and this course the Professor decided on adopting, to consider as species those groups of forms which are homogeneous and are separated from the nearest allied forms by *several constant* characters; and then, out of the numberless slightly differing forms, to constitute groups or *collective species*, the difference between these being much greater than that between the single members of the group, provided that extremes be not chosen. In this way the number of species is much reduced; some are homogeneous, others are heterogeneous, and it becomes necessary to introduce the ranks of subspecies, varieties, and subvarieties.

Prof. Hackel's idea of a species may be gathered from the following, which is a free translation:—"If we look upon a species as something *created* (Geschaffenes), as Jordan does, we must hold as species all distinguishable and recognisable forms; if, on the other hand, we have learnt to regard a species as something *developed* (Gewordenes), if we believe that the numerous nearly allied forms of a certain group are all of them descendants of a homogeneous parent form A, but were subject to very varied conditions; whilst another form B, synchronously with A, was subject to very little or no variety of conditions, appearing now as a homogeneous whole—we may express this state of things by saying that the whole group of forms which proceeded from A is equivalent to the single form B, and we may term each a species, viz., the whole group represented by A, and the single form B."

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* [Mr. Townsend has requested me to say that his own heading to this article was 'On Prof. Hackel's Monograph of European Fescues'—a title which he considers more appropriate.—Ed. Journ. Bot.]

Prof. Hackel has paid much attention to the behaviour of the various forms of *Festuca* under cultivation, raising them from seed where possible, though he finds this less easily practicable than might be expected, in consequence of the numerous cases in which the fruit is not brought to perfection. He declares, however, that little can be learnt from cultivating, for he finds all forms, even subspecies and subvarieties, are reproduced with characters as distinct as in the originals, and that even the weaker characters, such as the absence of an awn in *F. ovina* var. *capillata*, offer no exception.

Variations produced by situation (standorts-formen) are, however, not constant; for instance, in damp shady places all the parts become weak and bent, the leaves lengthen and become thinner, the sclerenchyma becomes weaker, the colour of the green is deeper or yellower, the folded leaf becomes open, the florets are more delicate and loosely placed. In dry situations the parts become more rigid, thicker, shorter, more closely placed together, the colour glaucous. All these characters disappear in the first generation if the conditions be changed. Again, in heavy soil the runners are short; in loose soil, long. It is easy to recognise the peculiarities of character which are induced by situation; but we must not forget to distinguish permanent forms induced by one and the same peculiarity of situation throughout an endless series of generations, such as *F. ovina-alpina* and *F.* (*rubra*) *sabulicola*, Duf.

Prof. Hackel devotes several pages to an explanation of his opinions as regards the relative value (Dignität) of the forms, and of the method by which he arrives at the grouping into species, subspecies, varieties, and subvarieties; but unfortunately I find his style and language so involved and wordy that it is difficult to give a distinct and clear idea of his reasoning. At page 52 he says that, for estimating the value of forms, the following may serve as practical criteria:—The number of distinctive characters, but especially their relative absence or presence, in numerous examples, in a weaker or more inconstant manner; or their presence in combination with those of another and distinct form. He then goes on to explain that such intermediate forms which obliterate boundary lines become always more numerous as we adopt lower grades of value. Therefore we shall much oftener meet with specimens which cannot be placed with any known *variety* of a species than with specimens which cannot easily be placed with a distinctly marked species. And, between species, such intermediate forms hardly can occur, otherwise they would cease to be species.

Prof. Hackel says he has sometimes described as species forms with which no connecting links to neighbouring forms were known to him, but he has done this only when he has been led, from other considerations, to believe such links to be really existing, or in cases in which there existed but one distinguishing character. In the latter case the separation of the form from nearly allied ones is evident, for if a form from the birth of a differential character has separated from the rest, then such a form continues to vary for some time in different directions. The deviation continues to work till it builds, in addition to the first, again secondary differential characters, and these strengthen, if we suppose a sufficiently long time to elapse, until the form become a well marked species.

The presence of a *single* distinctive character, on the other hand, betokens that we have before us the commencement of the development of a species, and examples usually present themselves, sooner or later, which will show the distinguishing character less sharply defined.

The author names "*varieties*" those forms which in their most marked representatives are well characterised and distinguishable, are numerous, but of which examples not unfrequently occur which cannot be accurately defined, and which must be looked upon as connecting links to other forms. As a rule, he states that he has always pointed out the affinity which he has perceived each *variety* to possess to any other form, since he believes this to be very important as a means for determining its origin.

As "*subvarieties*" the author has distinguished those forms which are separated from one another mostly by one single character, unstable or of low value; should a second and about equally unstable character be present, then the form would be intermediate between variety and subvariety, and the author has sometimes pointed out instances. There are plenty of forms to which one may rightly assign a higher or a lower rank, on account of their occupying an intermediate position between the two. The relationship of subspecies one to another, or to a frequently occurring variety, is in most cases evident. It is at least possible to name the form from which the subvariety may be supposed to have originated, and in many cases in which the subvariety occurs sparsely within a circumscribed area there can be no doubt respecting its origin; as an example, the author gives—subvar. *aurata* of *F. rubra*, subsp. *violacea*, which has sprung from *F. rubra*[*] var. *gemina*.

As a help to weigh the value or dignity of a form, the author has observed the following in connection with its geographical distribution. All forms of a higher grade, at least all species and subspecies, have a defined and limited area of distribution, be it large or small; and, if interrupted, yet the distant stations are to a certain extent connected. This is evident, if we accept the fact that the widely differing forms had somewhere their birthplace from which they wandered, or spread themselves over a narrow or over a more extended area. Now if the existence of one such form consists in the alliance of *several* distinct characters, then in order that the same form or species shall become developed and appear in some other station on the globe, such species must again, out of the thousand possible surrounding combinations, bring about those which constituted the supposed species. Such an occurrence is most unlikely. Much more likely is it that, from the same parent form, the supposed species may became developed in several stations, if it differ from the parent form only in one or possibly in a second correlative distinctive character. Thus it comes about that subvarieties, and in part also varieties, can develop themselves independently in several different localities where the parent form exists.

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[*] In the text we read "subvar. *gemina*," which must evidently be a misprint.

Hybrids between two species of *Festuca* have not as yet been noticed, but Prof. Hackel thinks that in all probability *F. Schlickumii*, Grantz., is *F. elatior* × *gigantea*. He considers *F. loliacea*, Curt., Huds., to be undoubtedly a hybrid between *Festuca elatior* and *Lolium perenne;* and *F. Brinkmanni*, A. Br., he describes as a hybrid between *F. gigantea* and *Lolium perenne.* He only knows of one instance of hybridity between two subspecies, viz., between *F. ovina* var. *vaginata* and var. *pseudovina*, the first being a var. of subsp. *euovina*, the second a var. of subsp. *sulcata.*

C.—Geographical Distribution.

The genus *Festuca* has its principal development in the higher regions of the Alps, Carpathians, and Southern Peninsula. In the Alps there are fourteen species, but only one is endemic—*F. laxa.* In the Pyrenees there are but seven species, and not one of these is endemic; nevertheless there is a profusion of subspecies and varieties. The Spanish Peninsula is the home of the genus: here there are seventeen species, eight of which are endemic—*F. Hystrix*, *Clementei*, *plicata*, *ampla*, *Henriquezii*, *elegans*, *Pseudo-eskia*, *granatensis.* Two of the seventeen species, *F. scaberrima* and *triflora*, are not found in any other part of Europe, but they also inhabit Northern Africa; one, *F. cærulescens*, is found also in Northern Africa and Sicily; one, *F. montana*, is found also in Northern Africa, Sicily, the southern half of the Appenine Peninsula, throughout the whole of the Balkan Peninsula, on the borders of the Eastern Alps and the Carpathians, and in Southern Asia. Throughout nearly the whole of Russia and Germany, as far as the Alps and North and West France, the Netherlands, Great Britain, and Scandinavia, there are but five species—*F. ovina*, *rubra*, *elatior*, *gigantea*, and *sylvatica.*

There are three polymorphous species, and these—as would naturally be expected—are dispersed throughout an extended area they are, *F. ovina*, *rubra*, *elatior*, and *varia*.

The following subspecies are monomorphic:—*F. ovina* subsp. *Beckeri*, *Borderii*, *alpina*, *and brevifolia*; *F. rubra*, subsp. *heterophylla*, *pyrenaica*, *nevadensis*, and *dumetorum*: *F. varia*, subsp. *Eskia*, *alpestris*, *zanthina*, *flavescens*, and *pumila*.

Those species which have folded leaves are evidently later developed forms, induced by dryness of both air and soil; hence it follows that these forms are more subject to variation. The contrary is the case as regards the flat-leaved species, which have now almost ceased to vary, though we should except *F. elatior*.

The folded leaf must, nevertheless, not be taken as necessarily a sign of affinity. The flat leaf occurs in all three folded-leaf sections. Neither is the form of the ligule of any use as betokening affinity.

The ovarium of the ancestral form appears to have been hairy. In four sections it is universally so, and examples occur even in the glabrous-ovary section, viz., in *Ovinæ*. In those sections which have a hairy ovary the species are more sharply defined and separated, which is a token of antiquity.

The adherence of the pale to the ovary is a late character. In the older species, viz., those with a hairy ovary, the latter is free or only slightly adherent. Extravaginal growth of the bud is of greater antiquity than intravaginal growth. We find that as the tendency of the leaves to become folded increases the extravaginal growth disappears.

The oldest form Prof. Hackel believes will be found in the group *extravaginales* of the section *Variæ* and in the section *Montanæ*. The first-named group (*Amphigenes*, Janka) inhabits widely separated areas, viz., the Southern Alps, the mountains of the Balkan Peninsula, the Carpathian Mountains, the Appennines, and Sierra Nevada; the areas are constricted, and some of the species are exceedingly rare; all which facts point to extreme antiquity. The species of the *Montana* group are more widely distributed, but their slight tendency to variation (ex. *F. sylvatica*) favours great antiquity. The section *Scariosæ*, with its isolated representative, *F. granatensis*, may be looked upon as offset from the *Amphigenes* group. All three groups stand nearer to *Poa* than do the rest of the Fescues (hence "*Amphigenes*," Janka, *Poa sylvatica*, Poll., the old name for *F. sylvatica*; and *Poa scariosa*, Lag., the old name for *F. granatensis*), and are therefore less specialised, less typical. The section *Subbulbosæ* exhibits a strong African relation; its members show little affinity with European Fescues; and possibly it may be found to have more with African species. The members of the section *Bovinæ* undoubtedly exhibit great antiquity, for they have retained many primitive characters. There are in this section, in Europe, two strongly-marked species, one of which—*F. gigantea*—has a remarkably broken area of distribution; nevertheless the author considers the species which constitute this section as later than the *Amphigenes*, for from it has evidently sprung the nearest of all the Fescue forms, viz., the *Ovina* group, which again have probably sprung from *F. rubra*.

The following are the characters of the six sections, and I have given the species comprised in them at the end of each section:—

Sect. I. OVINÆ.—Vaginæ innovationum basi non incrassatæ. Ligulæ brevissimæ, truncatæ, sæpe biauriculatæ. Laminæ aut omnes complicatæ aut foliorum culmeorum plus minusve planæ, vernatione conduplicata. Spiculæ ellipticæ v. oblongo-ellipticæ. Glumæ fertiles anguste scarioso-marginatæ, fructiferæ marginibus valde involutis. Ovarium obovato-oblongum glabrum raro vertice parce hispidulum, stylis exacte terminalibus. Caryopsis oblonga, ventre profunde caniculata, paleæ et glumæ arcte adhærens, macula hilari caryopsidis longitudinem subæquante notata.

F. ovina, L., sens. ampliss.; *F. Hystrix*, Boiss.; *F. Clementei*, Boiss.; *F. plicata*, Hack.; (?) *F. Morisiana*, Parl.; *F. amethystina*, L.; *F. scaberrima*, Lange; *F. ampla*, Hack.; *F. Henriquezii*, n. sp.; *F. rubra*, L., sens. ampliss.; *F. Porcii*, n. sp.

Sect. II. BOVINÆ.—Vaginæ basi non incrassatæ. Ligulæ brevissimæ, truncatæ exauriculatæ; vaginæ os sæpe in auriculas falciformes protractum. Laminæ omnes plerumque planæ raro subconvolutæ, vernatione convoluta. Spiculæ ellipticæ v. oblongo-ellipticæ v. oblongæ; glumæ fertiles in $\frac{1}{6}$–$\frac{1}{4}$ superiore scariosæ, fructiferæ valde involutæ. Ovarium obovatum, glabrum, stylis subterminalibus. Caryopsis oblonga v. obovato-oblonga, ventre late caniculata, paleæ glumæque arcte adhærens, macula hilari lineari caryopsidis longitudinem subæqante notata.

F. elatior, L., sens. ampliss.; *F. gigantea*, Vill.

Sect. III. SUBBULBOSÆ, *Nym.*—Vaginæ innovationum basi in bulbos oblongos sensim incrassatæ. Ligulæ truncatæ, exauriculatæ. Laminæ planæ v. plus minusve complicatæ vernatione conduplicata v. rarius convoluta. Spiculæ obovatæ v. ellipticæ; glumæ fertiles apice marginibusque anguste scariosæ, fructiferæ marginibus valde involutæ. Ovarium obovatum vertice plus minusve hispidulum, rarissime glabrescens, stylis terminalibus vel paullulum infra apicem insertis. Caryopsis oblonga, ventre plus minusve canaliculata, paleæ (saltem basi) adhærens, macula hilari caryopsidis longitudinem subæquante notata.

F. triflora, Desf.; *F. spadicea*, L., sens. ampliss.; *F. cærulescens*, Desf.

Sect. IV. VARIÆ.—Vaginæ basi non incrassatæ. Ligulæ variæ, exauriculatæ. Laminæ complicatæ v. rarius planæ, vernatione conduplicata v. convoluta. Spiculæ forma varia; glumæ fertiles apice marginibusque latius scariosæ, fructiferæ marginibus laxe involutis. Ovarium obovatum, plus minusve hispidulum, stylis terminalibus. Caryopsis oblonga, ventre caniculata, libera (vel vix basi paleæ paullum adhærens), sed glumis paleisque arcte involuta, macula hilari caryopsidem subæquante v. ea paullo breviori notata.

F. varia, Hænke, sens. ampliss.; *F. elegans*, Boiss.; *F. laxa*, Hort.; *F. dimorpha*, Guss.; *F. Carpathica*, Dietr.; *F. spectabilis*, Jan., emend.; *F. calabrica*, Huter.; *F. pulchella*, Schrad.; *F. pseudo-eskia*, Boiss.

Sect. V. SCARIOSÆ.—Vaginæ non incrassatæ. Ligulæ elongatæ, acutæ, exauriculatæ. Laminæ planæ v. subconvolutæ, vernatione conduplicata. Spiculæ ellipticæ; glumæ fertiles apice marginibusque ad $\frac{1}{4}$ scariosæ, fructiferæ valde involutæ. Ovarium pyriforme, vertice hispidulum, stylis terminalibus. Caryopsis obovato-oblonga, ventre late-caniculata, paleæ arcte adhærens, macula hilari lanceolata dimidia caryopside breviori notata.

F. granatensis, Boiss.

Sect. VI. MONTANÆ.—Vaginæ basi non incrassatæ. Ligulæ truncatæ, exauriculatæ. Laminæ planæ, vernatione convoluta. Spiculæ ellipticæ. Glumæ fertiles angustissime scarioso-marginatæ, fructiferæ laxe involutæ. Ovarium obovato-oblongum, vertice hispidulum, stylis subterminalibus. Caryopsis oblonga, libera v. basi paleæ adhærens, ventre plana exsulca v. subsulcata, macula hilari lineari dimidiam caryopsidem æquante v. subsuperante notata.

F. montana, M. Bieberst.; *F. sylvatica*, Vill.

Figures are given illustrating the ovary and caryopsis of most of the sections.

It has already been noticed that *F. pilosa*, Hall, is excluded, from its hilum being oblong-punctiform, and is referred to *Poa*. *F. oraria*, Dumort, *F. arenaria*, Osb., is ranked as subvar. *arenaria* of var. *genuina* of subsp. *eu-rubra* of sp. *F. rubra*. *F. pumila*, Vill., is ranked as subsp. *pumila* of *F. varia*, along with six other subspecies, two of which are *F. eskia*, Ram., and *F. flavescens*, Bell. *F. duriuscula*, ranked as a subsp. of *F. rubra* by Syme, is ranked by Prof. Hackel as subvar. *vulgaris* of subsp. *eu-rubra* of *F. rubra*. *F. valesiaca*, Koch, is ranked as var. *valesiaca* of subsp. *sulcata* of *F. ovina*. *F. indigesta*, Boiss., is ranked as subsp. *indigesta* of *F. ovina*. *F. Hystrix*, Boiss., given by Nyman and also by Willk. as a var. of the *F. indigesta*, Boiss., is again raised to the rank of a species by Prof. Hackel. I give the above instances as examples of Prof. Hackel's naming, but I should at the same time state that in order to avoid the cumbersomeness which would attach to the above way of writing the name of a variety or subvariety Prof. Hackel would write *F. oraria*, Dumort., thus—*F. rubra* subvar. or s.v. *arenaria*. *F. pumila*, Vill., he would write—*F. varia* subsp. or sp. *pumila*, &c.

An analytical table of species is given at the end of the work; also, analytical tables of the subspecies, where these are numerous, are also given in the body of the work. I should not omit to notice that the sections are only given by Prof. Hackel as applying to the European Fescues; he does not consider his acquaintance with extra-European species as sufficient to warrant their being applied more generally, otherwise he would have ranked them and named them as subgenera.

Time only will prove whether Prof. Hackel be correct in

ascribing to the different forms of *Festuca* such constancy of character as to warrant their being so minutely subdivided and receiving subvarietal names; also, if there be such constancy, whether every botanist might not add to the number by a careful study of forms in his own neighbourhood, and thus render the accumulation too cumbersome to be of any real practical value. Time only, again, will prove whether future observation and experiment will strengthen or weaken the theory of descent with modification now all but universally accepted, and so ably supported and applied by Prof. Hackel.* There can be no doubt of his ability as a patient and able investigator, and his monograph is a valuable contribution to Science.

About 130 pages are devoted to the descriptive portion of the work. The descriptions of the species, subspecies, and varieties are full, and are drawn up with great care. The synonomy is carefully worked out. The distribution of the forms is given even down to the subvarieties.

NEW FERNS FROM SOUTHERN BRAZIL.

By J. G. Baker, F.R.S.

The parcel received lately from Dr. Glaziou, containing the *Gorceixia* (figured in the August number of this Journal), includes also the following new species of *Adiantum*, and a very curious new *Acrostichum*.

5* Adiantum Amelianum, Glaziou in herb. — Stipes slender, tufted, naked, castaneous, 4–6 in. long. Lamina lanceolate, simply pinnate, 6–12 in. long, 18–21 lin. broad, often caudate and rooting at the tip, bright green, membranous, glabrous. Rachis castaneous, without hairs or scales. Pinnæ sessile, contiguous, all but the lowest dimidiate, subquadrate, attached by the lowest corner, those at the centre of the frond $\frac{5}{8}$–$\frac{3}{4}$ in. long, entire on the inner and lower borders, deeply lobed on the upper, and finely denticulate when barren; basal pinnæ suborbicular, with more numerous lobes. Veins fine, close, free, regularly flabellate. Sori one to each lobe of the pinnæ, $\frac{1}{6}$–$\frac{1}{3}$ in. long, with a moderately broad brown glabrous involucre, *Glaziou* 12287!—A close ally of the very rare *A. rhizophytum*, Schrad., figured in Mart. Crypt. Bras., t. 62.

12* Adiantum Glaziovii, n. sp.—Rhizome creeping, about the thickness of a swan's quill. Stipes slender, naked, castaneous, a foot or more long. Lamina deltoid, bipinnate, under a foot long, bright green, glabrous, firm and rigid in texture; rachises naked, castaneous. Pinnæ 2–5-jugate, erecto-patent, the side ones shorter than the end one, 3–6 in. long, 1–1$\frac{1}{4}$ in. broad. Ultimate segments oblong-deltoid, not contiguous, sessile or subsessile, obtuse, $\frac{1}{2}$–$\frac{3}{4}$

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* Bull. Soc. Fr., Rev. Bib., 1882, p. 28.

rarely in. long, cut away for the lower third of the posterior border, the inner upper corner touching the rachis or wrapping over it. Veins fine, close, free, flabellate. Sori placed all round the edge of the segments, except the inner and base of the lower margin, broken up into numerous close oblong patches, with a very narrow glabrous involucre, *Glaziou* 13345! — Habit of *obtusum*, but the segments in shape and arrangement of sori like *intermedium*.

22* Adiantum Diogoanum, Glaziou in herb.—Stipe about a foot long, square, more or less furfuraceous. Lamina copiously bipinnate, a foot long, dark green, glabrous, moderately firm in texture; rachis furfuraceous. Pinnæ about 10, lanceolate, 6–9 in. long, 1–1¼ in. broad. Segments contiguous, sessile, dimidiate, subquadrate, ½–¾ in. long, ⅓ in. broad, entire on the inner and lower border, not lobed, but sharply serrated when barren on the upper and outer edges; anterior corner touching the rachis, or a little imbricated over it. Sori extending all round the upper and outer borders, continuous, but broken into numerous slightly curved portions; involucre narrow, glabrous.—Terra da Babylonia, gathered by Madame Amelie Diogo Velho, *Dr. Glaziou*. Intermediate between *villosum* and *cristatum*.

111* Acrostichum Gillianum (Glaziou in herb.).—Sterile fronds 6–10 sessile in a rosette, oblanceolate, obtuse, entire, 2–3 in. long, ½–¾ in. broad, narrowed from above the middle gradually to the base, rather thick in texture, green and slightly scaly on the upper surface, densely clothed with persistent brown minute lanceolate ciliated paleæ beneath. Fertile frond with a slightly scaly fragile castaneous stripe 6–8 in. long, and three palmately arranged shortly petioled entire linear segments 2–3 in. long, green and nearly glabrous above, densely scaly on the soriferous lower surface.—Woods at Arasenahy, Minas Geraes, gathered by M. Gille, *Glaziou* 13341! A very interesting novelty, closely allied only to *Acrostichum aureo-nitens*, an endemic species of the Galapagos Islands, figured in Hooker's 'Icones,' tab. 933.

NOTE ON THE GERMINATING SPORIDIA OF *VALSA CEIPHEMIA*, Fr.

By George Massee.

Respecting the germination and development of the group of fungi called *Pyrenomycetes* but little is known. The following observations, although falling short of a complete account of the cycle of changes, carry us one step further towards the elucidation of the functions and relative value of the numerous bodies which are, in some way or other, connected with reproduction. Sections of the above-named plant were placed in gelatine, previous to being mounted as microscopic objects. At the end of three days it was noticed that most of the sporidia had germinated; the gelatine was thinned with a little water, and the growing bodies kept under observation for three weeks, after which period no further development took place. When first observed, the free sporidia had emitted threads from three to six times their own length, but germination had also commenced in those yet within the ascus; the latter, being ruptured by the growing tubes, soon disappeared, or possibly resolved itself into the mucus by which the sporidia were agglutinated together in every instance where germination preceded its disappearance. Before the emission of germ tubes the sporidia change to some extent their shape, and become wider, especially at the extremities, from which the threads originate; rarely a third springs from near the middle of the sporidium; this difference of shape is very evident where only some of the sporidia in an ascus germinated, the barren ones retaining their original form and dimensions. The threads, which are transparent and filled with protoplasm containing minute granules, have a diameter nearly equal to that of the sporidium, grow in a curved direction, giving off at the same time most frequently, although not invariably, from the concave side three or four similarly curved or sometimes spirally twisted branches. Up to this point no septæ are present. The next change consists in the tips of the branches and that of the main tube, also less frequently interstitial portions, becoming inflated into more or less globose vesicles, which are irregular in size, but generally many times larger than the sporidia. The plastic contents of the threads are soon concentrated in these inflated portions in the form of oily-looking globules; a transverse septum separates them from the empty tube, which soon disappears, leaving the vesicles floating in the liquid. Sometimes the vesicles remain attached to the threads and are not separated from them by a septum; but whether free or attached, a few days after their full development, minute elevations, varying in number from two to five, appear scattered over the surface; these points continue growing, and soon a much-branched, unicellular, mycelial-looking mass is produced; the threads are much narrower and more branched than those that started from the sporidia. These vesicles are not sporules, but reservoirs of protoplasm, which serve as starting-points for further development; from two to six are produced by each sporidium, and if each one developes into an individual the advantage of their production is obvious. Those who see in each succeeding phase of development an additional generation, usually consider the ascigerous condition as the final and most highly developed stage; but in the present instance the contents of the asci-sporidia closely approach, if they are not identical with, the pseudo-spores of Dr. Cooke, in producing on their germ tubes bodies capable of germination, or rather, after concentrating within themselves all the plastic material from the original sporidium and germ-tube, commencing growth afresh.

Extracts, and Notices of Books.

THE FLORA OF COLONSAY AND ORANSAY.

[In last year's volume of this Journal (pp. 155–57) we extracted from the 'Transactions of the Botanical Society of Edinburgh' a list of the plants of the above-named islands of the Lower Hebrides. Mr. Symington Grieve has now published in the 'Transactions' of of the same Society (vol. xvi., pt. 2, pp. 219–224) a supplementary paper on the subject, from which we extract the following list of species not recorded in the previous enumeration. Those preceded by an asterisk are new to vice-county 102 (Ebudes South) of 'Topographical Botany.'—Ed. Journ. Bot.]

*Ranunculus trichophyllus.
R. hederaceus.
R. bulbosus. Kiloran Bay and Oransay.
*R. Ficaria.
*Fumaria officinalis.
*Cochlearia officinalis.
*Draba verna.
*D. incana.
Viola tricolor.
V. lutea.
*Lychnis vespertina.
Honkeneja peploides.
*Sagina maritima.
S. subulata.
S. nodosa.
*Spergularia rubra.
Montia fontana.
*Hypericum perforatum.
H. tetrapterum.
H. Elodes.
Radiola Millegrana.
*Geranium sanguineum.
G. dissectum.
Ilex Aquifolium.
Trifolium minus.
*Astragalus hypoglottis.
Orobus tuberosus.
Prunus spinosa.
*Potentilla Fragariastrum.
Rosa canina.
Cratægus Oxyacantha.
*Pyrus Malus.
Epilobium palustre.
Helosciadium inundatum.
Chærophyllum sylvestre.
Conium maculatum. Near Scallasaig and ruins, Oransay.
*Galium uliginosum.
Valeriana officinalis. Ardskinish Glen.
Scabiosa Succisa.
*Carlina vulgaris.
Matricaria inodora, *var.* maritima.
M. Chamomilla.[†]
Tanacetum vulgare. Kiloran and Ardskinish.
Achillea Ptarmica.
Artemisia vulgaris.
Gnaphalium uliginosum.
Senecio vulgaris.
S. sarracenicus. Near Kiloran.
Inula Helenium. Ardskinish Glen.
Aster Tripolium.
Solidago Virga-aurea.
Petasites vulgaris.
Lapsana communis.
Leontodon autumnale.
Sonchus oleraceus.
S. arvensis.
Crepis virens.
Hieracium Pilosella.
Jasione montana.
Fraxinus excelsior.
Vinca minor. Ruins of priory, Oransay, introduced.

[†] [There may possibly be some mistake here, as *M. Chamomilla* is only doubtfully recorded as a Scottish plant.—Ed. Journ. Bot.]

Gentiana campestris.
Convolvulus sepium.
Mimulus luteus. Thoroughly established along the edges of the stream which flows to Kiloran Bay, where it is also found growing upon the beach.
Bartsia Odontites.
*Orobanche rubra. Growing upon *Thymus Serpyllum*, Kiloran Bay.
Lycopus europæus.
Scutellaria galericulata.
Stachys palustris.
*S. ambigua.
*Myosotis palustris.†
*M. collina.
M. versicolor.
Anchusa officinalis. Seemingly introduced.
*Anagallis arvensis. Machrins, Colonsay; and Lochan Bay, Oransay.
Glaux maritima.
Plantago major.
P. lanceolata.
P. Coronopus.
Suæda maritima.
*Salsola Kali. Balerominmore and other parts of coast.
Chenopodium album.
Atriplex angustifolia.
A. Babingtonii.
Rumex obtusifolius. Kiloran.
R. crispus.
Polygonum Hydropiper.
P. Persicaria.
P. amphibium.
Hippophae rhamnoides. Introduced, but grows most luxuriantly.
Mercurialis perennis.
Ulmus suberosa.
Quercus Robur. A stunted form near Scallasaig, and on other parts of Colonsay, but principally on the northern half of the island.
Fagus sylvatica. Kiloran.
Corylus Avellana.
Alnus glutinosa. Of very large size near Kiloran.
Betula alba.
Populus alba. Introduced.
Salix repens.
*Pinus sylvestris.
Lemna minor.
Triglochin maritimum.
Alisma ranunculoides.
*Orchis incarnata.
Gymnadenia conopsea.
Narcissus biflorus. Wood near Kiloran, evidently introduced.
Luzula pilosa.
L. campestris.
L. multiflora.
Juncus acutiflorus.
J. bufonius.
J. compressus.
J. squarrosus.
Blysmus compressus.‡
Scirpus palustris.
S. cæspitosus.
*S. maritimus.
Eriophorum vaginatum.
Carex pulicaris.
C. vulpina.
C. glauca.
C. limosa.
*C. præcox.
C. ampullacea.
Anthoxanthum odoratum. Oransay.
Psamma arenaria.
Phragmites communis.
Holcus lanatus.
Molinia cærulea.
Poa annua.
*Lepturus filiformis.
Asplenium Ruta-muraria.
*Cystopteris fragilis, *var.* Dickieana. Rocks near New Cave, Oransay.
Nephrodium Oreopteris.
Polypodium Phegopteris.
*Botrychium Lunaria.

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† [*M. repens?* Cfr. 'Top. Bot.' 310.—Ed. Journ. Bot.]

‡ [" Insufficiently certified; *B. rufus* was thus misnamed" (in previous lists) Top. Bot.,' 122.]

Lycopodium Selago.
Equisetum arvense.
E. palustre.
Chara fragilis.
Sphagnum cuspidatum.
Dichodontium pellucidum. Moist ground near Loch Fada, Colonsay.
Dicranella heteromalla.
Dicranum fuscescens.
Campylopus fragilis, and *var.* densus.
Pottia Heimii. Crevices of rocks near Loch Fada, Colonsay.
Ditrichum flexicaule, *var.* densum.
Barbula ruralis, *var.* rupestris.
B. intermedia.
Ceratodon purpureus.
Racomitrium aciculare.
R. canescens.
Zygodon viridissimus. Walls of Crystal Spring Cavern, Colonsay; and *var.* rupestris, wet rocks near Loch Fada.
Ulota phyllantha.
Physcomitrium pyriforme.
Fumaria hygrometrica.
Bryum pendulum. Crevices of rocks near Loch Fada; the islanders sometimes use it for dyeing purposes, and say it gives a most beautiful dark brown colour.
B. alpinum.
Pogonatum nanum.
P. aloides.
Fontinalis antipyretica.
Hedwigia ciliata.
Camptothecium lutescens.
Brachythecium velutinum.
Eurynchium myosuroides.
E. striatum.
Hypnum aduncum, *Hedw.*, non *Bry. Brit.*, and *var.* Kneiffii.
H. molluscum.
H. palustre.
H. polygamum.
H. stellatum.

OFFICIAL REPORT FOR 1881 *OF THE DEPARTMENT OF BOTANY IN THE BRITISH MUSEUM.*

By W. Carruthers, F.R.S.

The principal work of the Department has consisted in preparing the public gallery. The exhibited collections in the public rooms belonging to the Department at Bloomsbury were removed to the new building in the early part of the year. Many unforeseen difficulties have hindered the progress of the work of arranging, while the protection of the collections from dangers incidental to the occupation of a new building has demanded the attention and occupied the time of the officers. Considerable progress has been made in the public gallery in arranging a series of specimens illustrative of the Natural Orders of plants. The exhibition rooms connected with this Department had hitherto been occupied with specimens suitable from their size, or from other peculiarities, for exhibition; and many divisions of the vegetable kingdom were altogether unrepresented. An attempt has now been made to present to the public a series of specimens representing all the Natural Orders, and, to make the exhibition both attractive and instructive, coloured drawings of the plants have been freely used with the specimens. Some of the fossil representatives of Natural Orders are intercalated with the recent specimens, and the distribution of each Order in time and space is shown on a small map. Small diagrams, exhibiting the characters on which the Orders are separated from each other, are introduced into the cases. It is believed that when the exhibition is completed it will present a self-interpreting view of the distribution and classification of the vegetable kingdom.

In addition to this work additions have been made to the great Herbarium, especially of plants belonging to the Orders *Ranunculaceæ*, *Nymphæaceæ*, *Cruciferæ*, *Saxifragaceæ*, *Rubiaceæ*, *Compositæ*, *Campanulaceæ*, *Ericaceæ*, *Epacridaceæ*, *Convolvulaceæ*, *Borragineæ*, *Loranthaceæ*, *Orchidaceæ*, *Scitamineæ*, *Cyperaceæ*, and *Gramineæ*. In the course of the work the following orders have been more or less rearranged :—*Ranunculaceæ*, *Violaceæ*, *Compositæ*, *Borragineæ*, *Juncaceæ*, *Commelinaceæ*, and *Cyperaceæ*.

In the beginning of the year the whole of the cellular plants which had been permanently placed in the rooms of the upper pavilion were removed to the basement, to escape the injury arising from irregular temperature and from smoke and soot. Alterations in the mode of heating having secured the maintenance of a regular temperature and the cure of the other evils, the collections were restored to their permanent position with satisfactory results.

The collection of seeds and fruits made by Sir Hans Sloane has been incorporated with the general series, and has thus been made accessible to students.

A careful revision and thorough re-arrangement of the British Herbarium has been made, and several important contributions from British botanists have been received and incorporated, with the view of making this invaluable collection more complete.

The principal addition to the collections during the year has been the acquisition by purchase of the large and valuable Herbarium of Mosses formed by the late Dr. Hampe, containing about 25,000 specimens ; a large proportion being types of species described by Hampe, Mueller, and other bryologists. This important addition to the Herbarium, which had been already enriched by the purchase of the Mosses and *Hepaticæ* of William Wilson, and the *Hepaticæ* of Hampe, makes it the most extensive and valuable collection of mosses and their allies in existence.

A unique and very important Lycopodiaceous cone from the coal-measures of France, beautifully preserved in silex, has been acquired from the representatives of the late Prof. Schimper, together with a fragment of another cone, supplementing a specimen which had for many years been in the possession of the Trustees. These cones have been the subject of memoirs by Robert Brown, Brongniart, and Schimper, and are of the greatest value from the light they have thrown on the Flora of the Carboniferous period.

The collections of R. A. Salisbury, presented to the Trustees by the late Dr. J. E. Gray, have been augmented by the addition of a collection of notes and drawings of Ericaceous plants, with fragments of the plants ; presented by Sir Joseph D. Hooker.

There have been also added to the Herbarium a valuable collection of Indian plants, consisting of nearly 3000 species, presented by Charles B. Clarke Esq. ; an important collection of South African plants, consisting of 1024 species, collected and presented by Harry Bolus Esq. ; 426 species of plants from North

America and Europe, presented by Arthur Bennett, Esq.; 196 species of plants from Afghanistan, collected and presented by Dr. Aitchison; 200 species of plants from Lower Egypt, collected and presented by H. A. Hurst, Esq.; 375 species of European plants from Huter; 415 species from North America, from Curtis; 642 species from Trinidad, collected by Fendler; 150 species from New Granada, collected by Simmons; 111 species from Buenos Ayres, collected by Edward White; 942 species from South Africa, collected by Rehmann; 110 species from Palestine, collected by Prof. Post; 400 species of Cryptogamous plants from Italy; 675 species of European and English Lichens, by different collectors; 350 species of European Lichens, from Dr. Nylander; 3 specimens of the coffee-leaf fungus, from Dr. Cooke; a specimen of *Indigofera heterosticha* from Tropical Africa, collected and presented by Major Serpa Pinto; and the spadix and leaf of *Anthurium hybridum*, from W. Bull, Esq.

There have been added to the collections of fruits and woods three fruits of *Omphalocarpum* from Africa, presented by Thos. Christy, Esq; a branch with cones of *Pinus Cedrus* grown at Hinton St. George, Somersetshire, presented by W. H. Broome, Esq.; specimens of *Loranthus longifolius* on 34 different trees from the Botanic Gardens at Saharumpore, presented by J. F. Duthie, Esq.; specimens of bamboos and sugar-canes from Demerara, presented by David Carruthers, Esq.; a collection of prepared specimens of Japanese woods, presented by J. Bisset, Esq.; specimens of oak and other woods from Pleistocene beds in the Thames Valley, presented by Dr. R. Messell; and specimens of charred wood from E. Beck. Esq.

To the British Herbarium there have been added specimens of 1168 plants from Devonshire, collected and presented by T. R. Archer Briggs, Esq.; 92 species of Shropshire plants, collected and presented by W. E. Beckwith, Esq.; 37 specimens of plants from G. C. Druce, Esq.; 62 species of Sussex plants from F. C. S. Roper, Esq.; 54 species of Northamptonshire plants from Miss Shepard; 92 species of Warwickshire plants from J. E. Bagnall, Esq.; 53 species of British plants from G. Nicholson, Esq.; specimens of *Trichomanes radicans* and *T. Andrewsii* from Mrs. Andrews; and specimens of rare and critical British species from F. A. Lees, Esq., F. Townsend, Esq., the Rev. R. P. Murray, W. D. Douglas, Esq., J. C. Melvill, Esq., Bolton King, Esq., C. Chantre, Esq., H. & J. Groves, Esq.. the Rev. W. W. Newbould, and Mrs. Pierce Butler.

The number of visits paid during the year to the Herbarium for scientific research and enquiry was 704. The following foreign botanists may be specified as having used the Herbarium in connection with their investigations:—Professor Asa Gray, of America; M. C. DeCandolle, of Geneva; Dr. Reinsch, Count Solms-Laubach, Baron Ettingshausen, and Mr. Bolus. Of British botanists the following may be specified:—Sir John Lubbock, Bart., Mr. C. B. Clarke, Mr. J. G. Baker, Mr. A. W. Bennett, Mr. A. Bennett, the Rev. J. M. Crombie, Mr. Howse, the Messrs. Groves, Mr. Holmes, Mr. Stratton, the Rev. W. W. Newbould, Professor Dickson, Professor Lawson, Professor Balfour, Mr. J. C. Mansell-Pleydell, Mr. W. P. Hiern, Mr. Boulger, Mr. Churchill, and Dr. Braithwaite.

MUMMY GARLANDS.

While Egyptologists of every nationality are congratulating themselves and each other upon the safety of the Boolak Museum, it will not be amiss to note that a priceless addition had been made to the treasures of that famous collection shortly before the breaking out of the late rebellion. Several of the royal mummies discovered last year at Dayr-el-Baharee were, it will be remembered, found garlanded with flowers, those flowers being for the most part in as perfect preservation as the specimen plants in a "Hortus Siccus." M. Arthur Rhoné, in a recent letter to *Le Temps*, has described the extremely curious way in which these garlands are woven. They consist of the petals and sepals of various flowers, detached from their stems, and enclosed each in a folded leaf of either the Egyptian willow (*Salix Safsaf*), or *Mimusops Kummel*, Bruce. The floral ornaments thus devised were then arranged in rows (the points being all set one way) and connected by means of a thread of date-leaf fibre woven in a kind of chain stitch. The whole resembles a coarse "edging" of vegetable lace-work. Among the flowers thus preserved are *Delphinium orientalis*, *Nymphæa cærulea* or *N. Lotus*, *Sesbania ægyptiaca*, and *Carthamus tinctorius*, so largely employed as a dye by the ancient inhabitants of the Nile valley. The dried fruit, as well as the dried yellow blossom of the *Acacia nilotica* is likewise present; and mention is also made of the blossom of a species of water-melon now extinct. The foregoing are all interwoven in the garlands in which the mummy of Amen-hotep I. was elaborately swathed. With others of the royal mummies were found fine detached specimens of both kinds of lotus, the blue and the white, with stems, blossoms, and seed-pods complete. Still more interesting is it to learn that upon the mummy of the priest Nebsooni, maternal grandfather of King Pinotem II. (XXIst Dynasty), there was found a specimen of the lichen known to botanists as the *Parmelia furfuracea*. This plant is indigenous to the islands of the Greek Archipelago, whence it must have been brought to Egypt at, or before, the period of the Her-Hor Dynasty (B.C. 1100 or B.C. 1200). Under the Arabic name of "Kheba," it is sold by the native druggists in Cairo to this day. These frail relics of many a vanished spring have been arranged for the Boolak Museum with exquisite skill by that eminent traveller and botanist Dr. Schweinfurth. Classified, mounted, and, so to say, illustrated by modern examples of the same flowers and plants, they fill eleven cases—a collection absolutely unique, and likely ever to remain so. The hues of these Old World flowers are said to be as brilliant as those of their modern prototypes; and, but for the labels which show them to be three thousand years apart, no ordinary observer could distinguish between those which were buried with the Pharaohs and those which were gathered and dried only a few months ago. —'*Academy*,' *Sept.* 23*rd*, 1881.

We have received from the authors two reprints from the ‘Proceedings of the Royal Irish Academy for 1882.’ The first, by Mr. S. A. Stewart, deals with the ‘Botany of the mountainous portion of Co. Fermanagh to the West of Lough Erne, and the adjoining district of Co. Cavan’; the second, by Mr. H. C. Hart, is a ‘Report upon the Botany of the Macgillicuddy’s Reeks, Co. Kerry.’ Mr. Stewart records as new to Ireland *Potamogeton Zizii*, “very sparingly in slow stream which connects Carrick Lake with Bunnahone Lake, near Derrygonnelly, Co. Fermanagh”; and a *Rubus* from the same neighbourhood, which Prof. Babington thinks is *R. emersistylus*, Mull., but “as the specimens gathered are rather scanty, and as Prof. Babington does not speak with absolute certainty, there must still remain some doubt as regards this form.” Mr. Stewart also records the following additions to the Flora of District X. of the ‘Cybele Hibernica” :—

Arabis hirsuta.
Sagina nodosa.
Linum catharticum.
Agrimonia Eupatoria.
Rosa arvensis.
Antennaria dioica.
Arctium nemorosum.
Hieracium anglicum.
H. lasiophyllum.
Gentiana campestris.
Myosotis cæspitosa.
Callitriche hamulata.
Habenaria viridis.
H. chlorantha.
Potamogeton pectinatus.
Scirpus setaceus.
Phleum pratense.
Aira flexuosa.
Cystopteris dentata.
Chara aspera.

Mr. Hart gives a general list of the plants observed in Macgillicuddy’s Reeks, arranged in descending order, beginning with the summit of Carron Tuohill (3414 ft.), and ending with Drishana, west of the Gap of Dunloe (about 400 ft.), where he found *Filago minima*, not previously recorded from Kerry. Of *Arbutus Unedo* Mr. Hart met with a single old tree by the stream from Lough Googh into Black Valley, but he saw it nowhere else on the Reeks. The following note upon the Saxifrages of the district is of interest:—“Having submitted a series to Mr. Baker, of Kew, he refers all the *S. hypnoides* forms to *S. hirta*, Sm. This plant is very variable, and occurs in two well-marked forms, the typical plant occurring at greater heights, and usually in more alpine situations and amongst alpine neighbours. Specimens from Baurtregaum, on the Slieve Mish range, Mr. Baker has called *S. affinis*, Don. It is quite indistinguishable from the plant of the Reeks, but bears sometimes a close resemblance to *S. cæspitosa*, Linn. Unfortunately an inversion of names appeared in my ‘Report on the Botany of the Galtee Mountains.’ I have there said that *S. platypetala* is the form usually met with in wetter mossy places at low levels by streams; ‘while *S. hirta*, var. *genuina*, the finest cut form with bristle-pointed leaves, is especially characteristic of the bases of the loftier cliffs.’ These names should be transposed. *S. platypetala* of the Galtees, this finest leaved form, is very distinct in appearance, more so, I think, than any of the others; it is named *S. sponhemica*, Gm., by Baker, and I have only met with it upon the Galtees. With regard to the *S. umbrosa* forms; as we travel westward *S. Geum* becomes more prevalent. On the Galtees *S. umbrosa* alone occurs; on the Reeks *S. umbrosa* is most abundant; but *S. Geum* is frequent, while *S. hirsuta* occurs. *S. Geum*, however, never ascends to any great height on the Reeks, finding its upper limit at 1650 feet in Cumloughra, while *S. hirsuta* is quite lowland. On the Slieve Mish Mountain, west of Tralee, *S. Geum* prevails at 2500 feet, and is abundant."

Two parts of the 'Flora Brasiliensis have recently been issued —a continuation of Mr. Baker's enumeration of the *Compositæ*, containing the *Asteroideæ* and *Inuloideæ;* and Dr. Kanitz's monograph of the Brazilian *Halorageæ.* Mr. Baker raises DeCandolle's section *Leucopsis* of the genus *Aplopappus* to the rank of a genus.

The 'Transactions of the Penzance Natural History and Antiquarian Society for 1881–82' contains several papers of botanical interest. Mr. W. Curnow gives a list of the *Hepaticæ* of West Cornwall, and in a postscript mentions his re-discovery of the long-lost *Petalophyllum Ralfsii* in the sand-flats at Gwithian. In conjunction with Mr. John Ralfs, the same author gives a list of West Cornwall Mosses. Mr. Ralfs contributes a paper 'On the genus *Euphrasia* and its Forms,' of which we may give an abstract in a future number. He recognises and describes four 'forms' in West Cornwall:—*E. montana*, Jord.; *E. tetraquetra*, Breb.; *E. gracilis*, Fr.; and *E. ericetorum*, Jord.

The last part (July 1882) of the 'Transactions of the Epping Forest and County of Essex Naturalists' Field Club' contains the conclusion of Mr. Boulger's paper 'On the Origin and Distribution of the British Flora,' and 'A preliminary List of the Hymenomycetal Fungi of Epping Forest,' by Dr. Cooke and Mr. English. Although not primarily of botanical interest, the paper on the Galls of Essex, by Mr. E. A. Fitch, is worthy of note. The species are arranged in the first instance in the order of the plants upon which they are found, numerous figures of the affected parts being given. The prominence given to local natural history in these Transactions is worthy of all praise.

The last instalment of Professor Asa Gray's 'Contributions to North American Botany' (issued June 26), contains among other interesting matter, "Studies of *Aster* and *Solidago* in the older Herbaria,"—the result of the author's visit to Europe last year. He examined the specimens in the herbaria of Linnæus, Cliffort, Banks, Morison, Sherard, and Willdenow; the herbarium of Nees von Esenbeck he was unable to trace. A "general disposition of the admitted North American species" of *Solidago* follows. The second contribution is a description of new plants, chiefly from Arizona and the adjacent districts. These are mostly *Compositæ*, and include three new genera of that order:—*Plummera* (*P. floribunda*), discovered by Mr. and Mrs. Lemmon in South Arizona, and dedicated to the latter under her maiden name; *Dugesia* (*Lindheimera mexicana*, A. Gray); and *Hecastocleis* (*H. Shockleyi*), a genus of *Mutisiaceæ* near *Ainsliæa*.

Prof. Sereno Watson has also issued (Aug. 10) a fasciculus of 'Contributions of American Botany,' containing a 'List of plants from South-western Texas and Northern Mexico, collected chiefly by Dr. E. Palmer in 1879–80'; and 'Descriptions of new species of plants from our western territories.' An index is issued with this part, for which workers cannot fail to be grateful.

New Books.—C. & W. Barbey, 'Herborisations au Levant' (Lausanne, Bridel). — M. Willkomm, 'Führer in das Reich der Pflanzen Deutschlands, Osterrichs und der Schweiz' (Leipzig, Mendelssohn).—J. Klinge, 'Flora von Est-, Liv- und Curland' (Reval, Kluge).

Articles in Journals.—September.

Annales des Sciences Naturelles, Botany, Sér. 6, xiv., 1 (August). —J. Rostafinski, 'On *Hydrurus* and its affinities' (1 plate).—L. Guignard, 'On the development of the anther and pollen of *Orchideæ*' (1 plate).—P. van Tieghem, 'On the Physiology of Fungi.'

Botanische Zeitung.—F. Schmitz, '*Phyllosiphon Arisari*' (concluded).—L. Just, Notes on the foregoing.—F. v. Höhnel, 'On the Mechanism of the formation of the Cell-membrane.'

Bulletin of Torrey Botanical Club.—E. L. Greene, 'New Californian Compositæ' (*Pentachæta alsinoides*, *Hemizonia Lobbii*, *H. Clevelandi*, *H. cephalotes*, *H. oppositifolia*, *Verbesina venosa*, *Microseris attenuata*).—J. B. Ellis, 'New North American Fungi' (*Valsa lutescens*, *V. binoculata*, *V. tuberculosa*, *V. venusta*, *V. Ampelopsidis*). —H. W. Ravenel, 'The Migration of Weeds.'

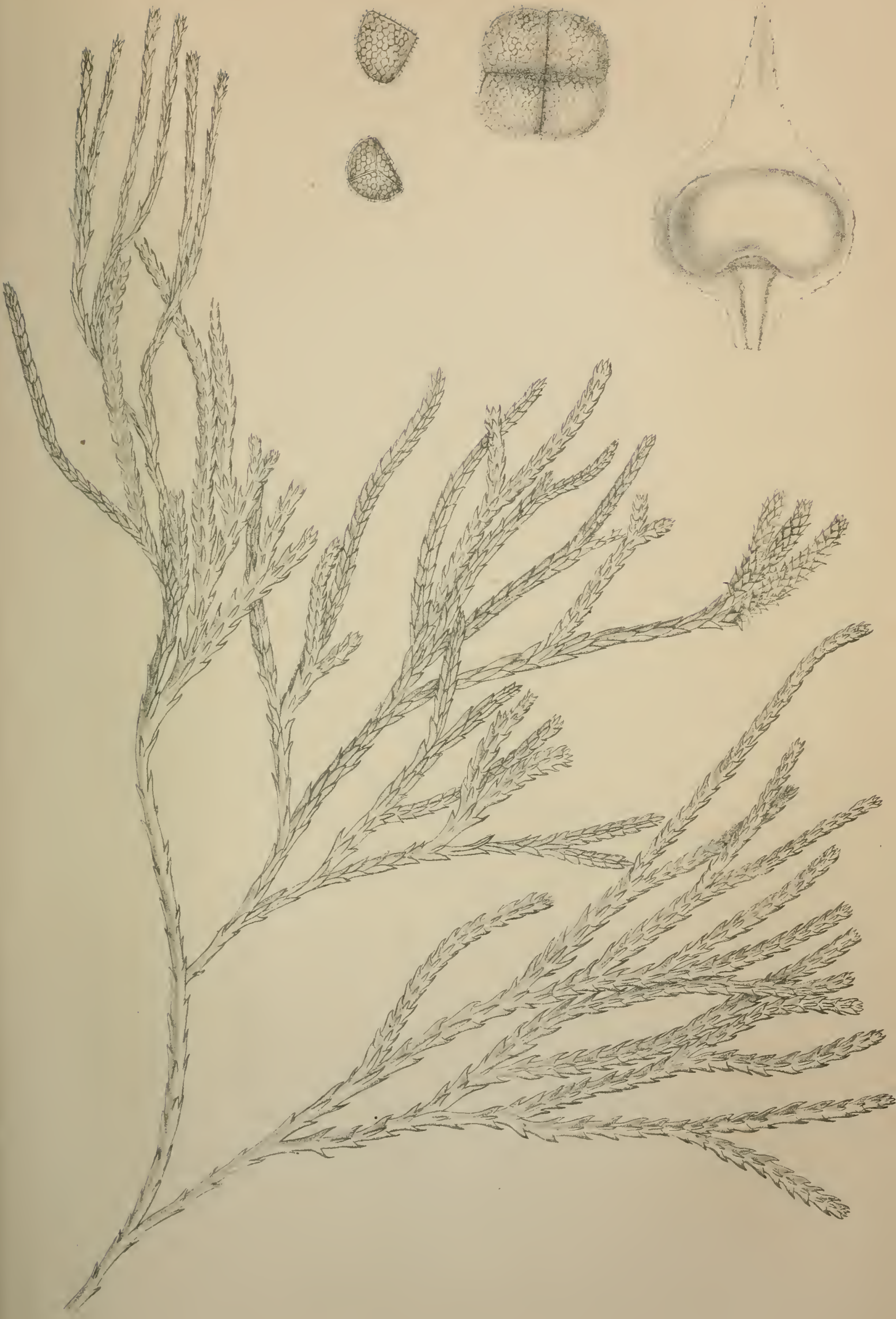
Flora (August).—T. Bokorny, 'On transparent markings in Leaves.'—O. Böckeler, 'New Cyperaceæ from Rio de Janeiro' (*Heleocharis valida*, *Cryptangium comatum*, *C. arundinaceum*, *Scleria Glazioviana*).—A. Geheeb, '*Barbula cæspitosa* in Germany.'

Midland Naturalist.—J. E. Bagnall, 'Flora of Warwickshire' (contd.).

Nuovo Giornale Bot. Italiano (July).—A. Jatta, 'African Lichens collected by the Marchese Antinori' (*Sticta Chiarini*, *Coccocarpia aphthosa*, *Pertusaria Antinoriana*, *Opegrapha luridescens*, *Trypthelium pusillum*, spp. nn.) (1 plate). — T. Caruel, 'On the Geographical Distribution of the Orders of Plants.'—L. Nicotra, 'On a spontaneous double-flowered variety of *Oxalis cernua*.'—O. Mattirolo, 'On the Sclerotium of *Peziza sclerotiorum*' (2 plates).—C. Massalango & A. Caresti, 'The Hepaticæ of the Pennine Alps' (4 plates).

Œsterreichische Bot. Zeitschrift.—F. Antoine, 'On *Schlumbergeria Roezli*' (1 plate).—V. von Janka, '*Odontolophus* (*Centaureæ* sect.) a distinct genus.' — P. Sintenis, 'Cyprus and its Flora' (contd.).—P. Von Strobl, 'Flora of Etna' (contd.).

Tab. 233.



R. Morgan del. et lith.

Lycopodium complanatum, L.

West, Newman & Co. imp.

Original Articles.

ON *LYCOPODIUM COMPLANATUM*, L., AS A BRITISH PLANT.

By G. C. Druce, F.L.S.

(Tab. 233.)

In the autumn of 1881 Mr. Bolton King gave me a specimen of a *Lycopodium* which had been gathered in Gloucestershire by the Rev. H. P. Reader, and referred to *L. alpinum*, but which, even in the scrap of a barren branch given to me, seemed scarcely to belong to that species. I placed it doubtfully in my herbarium under *L. alpinum;* pressure of business caused me to neglect the matter till this spring, when the receipt of a specimen of *L. complanatum*—which had been collected near Massachusetts, North America, by the Rev. A. Morong—from Mr. A. Bennett again recalled the Gloucestershire specimen. On applying to Mr. Reader he kindly sent me a fertile specimen, which, although differing from the American plant in the peduncles being so short as to make the spikes sessile, yet was obviously not *L. alpinum*, from its flattened suberect branches and general habit.

Having consulted the herbaria at Oxford, the British Museum, and Kew, there seemed to me little doubt that the plant was true *L. complanatum*, There were specimens in the Kew herbarium from South America with similar sessile spikes. Mr. J. G. Baker was good enough to examine it, and had no doubt as to its being *L. complanatum;* and he considered the length of peduncle as of little specific value.

We may glance at the previous records of this Lycopod as a British plant. In the 'Compendium of the Cybele Britannica,' p. 604, Mr. Watson thus refers to *L. complanatum:*—"Near Bramshot, Hants? Worcestershire? Error? Bab. Man., ed. 6, p. 445. Leefe msc." In Babington's 'Manual,' edit. 6th and 7th, it is placed in brackets, and mentioned as having been found at Bramshot, Hants; but the author doubted its being correctly named. In Hooker's 'Student's Flora' it is placed among the "errors" as being mistaken for *alpinum*.

With reference to the notice in 'Comp. Cyb. Brit.' of "Leefe msc.," Worcestershire, there seems to be some error, as the Rev. J. E. Leefe informs me he never found *L. alpinum* or *L. complanatum* in that county. Possibly the county record should have been referred to the Rev. Prof. Churchill Babington, who found, as Prof. C. C. Babington kindly writes me, "in July, 1837, on Hartlebury Common, Worcestershire, a plant which he thought might be *L. complanatum* or *L. Chamæcyparissus*, but which he had of late considered to be only a form of *L. alpinum*, growing in a rather low situation." Prof. Babington has also a barren specimen of so-called *L. complanatum*, found by Mr. John Lloyd at Lower Wagners Wells, in the parish of Bramshot, Hants, where the soil is a sandy peat ('Gard. Chron.,' 1867, pp. 808, 997), but which, like the Worcestershire plant, he has referred to *L. alpinum;* and he has omitted all reference to *L. complanatum* in the 8th edition of his 'Manual.'

With regard to its continental distribution, the following reference to *L. complanatum* is given in Spring's 'Monographie des Lycopodiacées' (p. 101):—"Hab. in sylvis apertis Europæ . . . . Per totam Europam frequens (Gallia, Germania, *Scotia*, Scandinavia, Pannonia); prope Petropolin." It also occurs in Belgium, Denmark, &c. The Scotch record I am unable to trace, but a plant near *L. complanatum* is contained in the British Museum Herbarium, localised Sidlaw Hills; I should refer this to *L. alpinum*, as also a similar plant, collected by Prof. Lawson in Skye, and my own specimens from Scuir Ouran, West Ross, which are more flattened and luxuriant than ordinary *alpinum*. From its continental distribution its occurrence in Britain might reasonably be expected, both geographical and climatal circumstances being favourable.

Lycopodium complanatum, Linn. Sp. Plant., 1567.—Stems extensively creeping, subterranean, with few scattered small leaves; ascending branches terete, dichotomously branching, with uniform coriaceous scattered leaves (never tipped with a hair), spirally arranged; secondary branches repeatedly dichotomising, ultimate divisions very compressed, concave on the inner and convex on the outer surface; the leaves of two kinds, arranged in four rows, the lateral series triangular and acute, with long decurrent bases, those on the inner surface small and subulate, borne at intervals on the slender rounded axis, on the convex surface the leaves are larger, linear-lanceolate and adpressed. The peduncles terminating the primary or secondary branches are terete and covered with uniform, linear-lanceolate, adpressed, entire leaves, spirally arranged. The peduncles dichotomously branch once or twice at the summit, each division bearing a spike. The spikes, two to six in number, are cylindrical, and the bracts, unlike the leaves, are broadly ovate, with an acute apex, and somewhat decurrent base; the margin is slightly serrated. The kidney-shaped spore case is sessile, and separates along the outer margin into two valves.*

The Rev. H. P. Reader has sent the following details of its English habitat:—

"At the head of one of the many valleys which intersect the otswolds about Stroud, the ground is broken up into several ferny knolls, divided by streamlets; and upon the side of one of these knolls the *Lycopodium*, recently identified as *complanatum*, occurs sparingly. The oolite here disappears, leaving the lias exposed, or but thinly and partially covered by a strip of fuller's earth. In consequence, the flora of this little tract (some six acres in extent), differs widely from that of the surrounding country, and includes a large number of plants which, to the best of my knowledge and observation, are not found, or are found but rarely, on the Cotswolds. *Lycopodium clavatum* grows here in abundance (I find a record of this dated fifty years back), with *Potentilla Tormentilla*, a scarce plant here. I may also add that here, and here alone in this neighbourhood, I find the following species more or less plentiful:—*Hieracium tridentatum*, *Gnaphalium sylvaticum*, *Vaccinium Myrtillus*, *Digitalis purpurea*, *Luzula congesta*, *Carex pilulifera*, *C. pallescens*, *Nephrodium Oreopteris*, *Calamagrostis Epigeios*, *Polytrichum juniperinum*, *Plagiothecium denticulatum*, *Hypnum Schreberi*, *Lepidozia reptans*, *Jungermannia crenulata*, *Bæomyces rufus*, *Cladonia digitata*, and *C. cervicornis*. It will be at once seen that these form a consistent and what one may call a harmonious flora, being plants such as are usually found associated together, which seems in itself an argument for their being indigenous. To any one familiar with the botany of Gloucestershire, I might summarize the botanical features of this piece of ground, by comparing it to a morsel taken out of the Forest of Dean and set down in our midst."

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* [For this description of the species we are indebted to the kindness of Mr. Carruthers, who has drawn it up from a Gloucestershire specimen, presented to the National Herbarium by the Rev. H. P. Reader.—Ed. Journ. Bot.]

DESCRIPTION OF TAB. 223.—*Lycopodium complanatum*, L., from a Gloucestershire specimen collected by the Rev. H. P. Reader. 1. Bract with spore-case. 2. Four microspores. 3. Separate microspores.

JAMAICA FERNS.

BY G. S. JENMAN, F.L.S.

HAVING recently had the opportunity of examining the Jamaica Ferns preserved in the Herbaria of the British Museum and Kew, the result, so far as it affects the number of the species, is embodied in the following paper.

The British Museum contains the older types collected by Swartz and Sloane, while the more copious collections made much later by Purdie, Wiles, March, Wilson, McFadyen and others, from which the chief knowledge of the West Indian ferns was derived, are at Kew; though a good set of Wilson's plants, some of which are not elsewhere, and a few from Purdie and Wiles, are in John Smith's collection in the British Museum.

CYATHEA JAMAICENSIS, n. sp.—Trunk tall, eventually becoming 12–14 feet high, unarmed, nerved below, but with a few narrow scales at the apex; fronds long, 2 feet wide, the reduced pinnæ extending to the base of the stipites, bipinnate; pinnæ sessile, 8–12 inches long, 2–2½ inches wide, and about the same distance apart from costa to costa; pinnulæ sessile, 1–1½ inches long, hardly ½ inch wide, deeply pinnatifid, with a subentire serrate apex; lobes deltoid; under side pale, surfaces naked but with a few minute scales on the costulæ and ribs, costæ pubescent above; texture subcoriaceous; veins simple, or the basal forked, 3–5 to a side; sori in two rows, one on each side, close to the costulæ, attached at the base of the veins, one or two to each lobe; involucre thin, dark brown, small and very shallow, with the receptacle exserted above the entire rim; costæ puberulous beneath, with a scar-like gland on the rachis at the base of each.—Mansfield, near Bath. Wilson, 686, in Herb. Brit. Mus. Near the Cuban *C. balanocarpa*, Eaton, from which it differs by the pinnatifid pinnulæ, less vestiture of leaf, and shallow, saucer-like involucres. According to Wilson there is no stipe or hardly any to the frond, the dwindling pinnæ reaching to its base; and it seems to be quite unarmed, the rachis being smooth and glabrous. Of Jamaican species the involucre resembles in form most that of *C. Serra*, Willd.

√ CYATHEA CONQUISITA, n. sp.—Trunk tall and stout; fronds erect, 5 or 6 feet long; (pinnæ ?) 6–8 inches long, 1–1¼ inches wide, quite sessile, fully pinnate, with half their own width between the lower segments; segments oblong, rounded at the apex, and finely serrulate, ¾ inch long, 2 lines wide, not curved but spreading horizontally, at least in the lower half; texture coriaceous; colour dark and dull above, beneath pale greyish; surfaces naked but a few minute scales on the ribs beneath, both rachis and costæ rusty tomentose above, the latter subarticulate at the base; veins once forked; the line of sori rather nearer the midvein than the margin; involucre very thin, dark brown eventually breaking down; rachis chestnut-brown.—Wilson, 134, in Herb. Brit. Mus. The specimens do not show whether this and the next are tripinnate or only bipinnate plants. Wilson's label says,—"A large growing tree-fern, fronds nearly upright, and five or six feet long, stem large, quite a (small) tree. Very different from No. 16." Its nearest affinity is with the following species, from which it is best recognised by the open space which occurs between the segments at their base, whereby the inferior ones are isolated. The segments are flat and the lines of sori and the veins show distinctly on the upper side.

√ CYATHEA PENDULA, n. sp.—Trunks several feet high, rather slender; fronds spreading, pendant; pinnæ (?) sessile, 6–9 inches long, 1–1¼ inches wide, deeply pinnatifid, or fully pinnate at the very base; segments 6–8 lines long, 1–2 lines wide, rounded and serrulate at the apex, the sinus between them being narrow; texture very coriaceous; colour dull dark green above, glaucous beneath; surfaces naked, the costæ being slightly puberulous beneath, and above rusty tomentose as is the rachis, the latter a bright chestnut-brown; veins once forked; sori situated at their forking, forming a line near the midrib; involucre very thin and fragile, chestnut-brown, breaking down to the base.—Wilson, 16, in Herb. Brit. Mus. "A tree-fern 8–10 feet high; stem about the size of a man's wrist or smaller, fronds at the top only which hang all round, hence its Creole name, 'Parasol Fern.' "Very different from 134," Wilson.

Hemitelia Imrayana, Hook.—Herb. J. Smith, Brit. Museum. A plant intermediate between *horrida* and *grandifolia.*

ALSOPHILA SESSILIFOLIA, n. sp.—Trunk stout, erect, attaining a height of 20 feet; stipites 2–2½ feet long, prickly, as is also the caudex; fronds ample, 8 or 9 feet long, bipinnate; pinnæ 18–24 inches long, about 8 inches wide, sessile; pinnulæ apart, with half their own width between them, 3–3½ inches long, ¾ inch wide, all, even the basal ones, quite sessile, cut ½ or ⅔ toward the midrib into flat, rather broad, rounded or subpointed lobes; colour pale, almost pruinose beneath; texture thinly coriaceous; surface naked above, beneath having a few brown scales on the costæ and sparse wool-like tomentum on the ribs and veins; apices of pinnulæ acuminate and serrate with oppressed shallow teeth; veins all simple, or the bottom one on the inferior side rarely forked, five or six to a side; sori reaching the top of the segment, nearer the margin than the rib, evident on the upper side; rachis straw-coloured and prickly.—Mansfield, near Bath. Wilson, Herb. Kew, 520; Herb. Brit. Mus., 513, A 1, 520. Wilson says the caudex is covered with roots from top to bottom. Its nearest ally is *A. aspera*, R. Br., from which its pale colour, simple veins, and quite sessile pinnæ and pinnulæ will distinguish it.—*A. nitens*, J. Sm., in part, Herb. Brit. Mus.

Wilson's No. 689 resembles *Alsophila aspera*, R. Br., exactly in cutting, but in habit is rather lax. Wilson, on his label, says it is known as the Black-spined Tree-fern. Spines very dark and shining. Caudex 12–16 feet high, a great many to a stool, six or eight or more, the central one tallest. He seems to have regarded *A. aspera* (his 513, A 2, which is typical) as distinct.

Alsophila ferox, Presl. — Wilson, in Herb. J. Smith, Brit. Mus.; and there is a specimen marked *A. aculeata*, J. Sm., which is also *A. ferox*, Presl. taken from a garden plant derived from Jamaica.

Trichomanes macilentum, Hk., lately discovered. Distinguished from *T. Bancroftii*, Hk., by its creeping rhizome and broader fronds.

There is a beautiful thinly membranous form of *Trichomanes alatum*, Sw., in J. Smith's plants, gathered by Wiles, with fronds 18 inches long from the base of the stipites and 3 inches wide.

Hymenophyllum myriocarpum, Hk., and *H. sphærocarpum* are identical. The plant varies a good deal in form and degree of fruitfulness. The free globose involucres on short pedicels, which are often uniformly reflexed and show only on the underside, mark it from *H. polyanthos*, Sw. There is no such plant. Is *N. flavescens*, Moore, intended? It is a Central American species. See the specimens.

Asplenium obtusifolium. L., var.—The rootstock is unknown. It has probably the habit of *A. dentatum*, L., between which and *marinum* it comes.

Asplenium expansum, Willd.—From Wilson in Herb. J. Smith, is a large plant of lax habit, with a rather slender stipe and rachis; pinnæ distant, and pinnulæ, which are very slightly lobed, ½ inch wide, 3 inches long, 1–1½ inches apart; simple veins and long diplazioid sori on the inferior one. The plants of the *radicans* group are in hopeless confusion in large herbaria.

Asplenium (*Diplazium*) monticolum, n. sp.—Stipites 8–12 inches long, slender, erect, naked; fronds about 12 inches long, 4–5 inches wide, bipinnate, not reduced at the base, the acuminate apices pinnatifido-serrate; pinnæ shortly pedicillate, 2 inches long, ½–1 inch broad, gradually widening to the lowest pair, fully pinnate at the base, above this pinnatifid, the apex subentire and sharply serrated, the inferior side narrower than the superior and its basal lobe absent; pinnulæ oblong, the lowest free one ovate, 5–7 lines long, 2–3 lines wide, blunt, serrate; texture thin; colour pale; surfaces naked; veins simple, or the inferior ones forked; sori about a line long, falling short of the rib and the margin; involucre flat, pale, thin and rather broad.—Herb. Kew. Gathered by R. N. Sherring, Esq. Near *A. semihastatum*, Kze., and *A. Mildei*, Kuhn.

Nephrodium incisum, Baker (*Goniopteris strigosa*, Fee.)

Nephrodium tenebricum, n. sp.—Stipites 6–8 inches long, erect, grayish puberulous; fronds 12–18 inches long, 4–7 inches wide, gradually reduced each way, the acuminate apex pinnatifido-serrate; pinnæ spreading, with an open space between them, usually the lower ones, which pass into mere auricles, being subdistant, central 2½–3½ inches long, ¼–½ inch wide, truncate and sessile, with a pair of enlarged lobes at the base, above these serrate or slightly lobed, the latter rounded and 1 line wide and deep, apices entire; texture chartaceous; colour dull, grayish; rachis and surfaces puberulous; veins about four to a side, the lowest opposite ones uniting in a vein to the sinus, where the next pair usually join it; sori medial on the lower veins, forming one or two rows along the costæ; involucre minute, soon obliterated.—Herb. Kew. Gathered by R. N. Sherring, Esq., on the north side of the Island. Near *arbuscula* and *amboinense*, from which the singular and uniform basal lobes separate it.

Polypodium firmum, Klotzsch, is a broader plant than normal *rigescens*, frequent at high altitudes, from which however it is doubtfully distinct.

Polypodium Sherringii, Baker, in lit., n. sp. — Stipites forming a dense tuft, short if any clear of the decurrent wings of the fronds; fronds 1½–2 inches long, 3 lines wide, blunt at the apex and narrowed at the base, cut into rounded broadish decurrent lobes, with an open oblique sinus between showing a clear wing to the rachis; rachis flexuose, buried under the pagina, the latter eventually dropping away from it; substance opaque, stiff; clothed with scattered dark brown hairs; lobes about 1 line each way, with a sorus to each near the rachis, borne on the spur at the base of the short concealed vein.—Collected by the gentleman after whom it is named in the Newton district of the Port Royal Mountains. It is the most densely tufted of all the smaller Jamaican species, and the stiff, thread-like rachises remain on the plants after the pagina has dropped from them.

Acrostichum flaccidum.—Herb. J. Smith, Brit. Museum.

ACROSTICHUM CHARTACEUM, Baker, in lit., n. sp. — Caudex woody and short, creeping, densely clothed with brown undulate acuminate scales; stipes of barren fronds 3–6 inches long, slightly deciduous, scaly; fronds narrowly lanceolate-acuminate, gradually tapering off at both ends alike, midrib and under surface more or less rusty furfuraceous, the older fronds after the greater part of this has fallen away showing minute, brown, scattered, peltate scales; fronds narrower on longer stipes.—John Crow Peak, 6000 feet elevation. Very near *A. Sartorii*, Liebm.

Acrostichum Huacsaro, Ruiz, = *A. viscosum*, Sw., var. *obtusum*, Jenman.

Acrostichum cubense, Mett.

Acrostichum Lindeni, Bory.=*A. villosum*, Sw., var. *subovatum*, Jenman.

In the British Museum Herbarium there are two specimens of the dwarf Tropical American form of *Osmunda regalis*, L., said to have been gathered in Jamaica by Shakspeare, a collector of a number of Jamaican ferns preserved in the Museum. No other collector seems to have found it, and as Shakspeare also collected on the mainland the locality may possibly be a mistake; but as the same form has been gathered in Cuba by Wright, I am disposed to regard it as correct.

Anemia filiformis, Presl.—Gathered by Purdie. Distinguished from *A. hirsuta*, Sw., by its very short stipites (½–1 inch) and single fertile branch.

Proof is required of the existence in Jamaica of the following plants which have hitherto been ascribed to the Island on the authority of specimens, which, so far as my investigation has been carried, prove to belong to the species following:—

Gleichenia revoluta, H. B. K. = *G. Matthewsii*, Hook.
Dicksonia adiantoides, H. B. K. = *D. cicutaria*, Swartz.
Hymenophyllum elegantulum, V. D. B. = *H. ciliatum*, Swartz.
Trichomanes lineolatum, Hook. = *T. reptans*, Swartz.
Adiantum Capillus-Veneris, L. *A. tenerum*, Swartz.
Asplenium diminutum, Baker = *A. Fadyeni*, Hook.
Aspidium serrulatum, Mett. *Nephrodium amboinense*, Presl.
Aspidium abbreviatum, Schrad. *Nephrodium amboinense*, Presl.
Nephrodium venustum, J. Sm. *N. Fendleri*, Hook.
Nephrodium asplenioides, Baker. *Polypodium asplenioides*, Swartz.
Polypodium curvatum, Swartz. *P. inæquale*, Fée.
Anemia mandiocana, Raddi. *A. Phyllitidis*, Swartz.
Danæa stenophylla, Kunze. *D. Moritziana*, Presl.

In addition, the subjoined, of which I have not seen Jamaica specimens, appear to require authentication.

Asplenium marinum, L., claimed to have been found by Sloane, near Bath; more recently, quite authentic specimens have been gathered in St. Vincent: *Nephrodium limbatum*, Desv.; *Nephrodium brachyodon*, Hook.; *Polypodium jubæforme*, Kaulf.; and *Psilotum complanatum*, Swartz.

The type specimens of *Adiantum pumilum*, Swartz, in the British Museum Herbarium, appear to be only young *A. cristatum*, L.

SOMERSET NOTES.

By the Rev. R. P. Murray, M.A., F.L.S.

Since my last communication to this Journal (p. 42) I have been fortunate enough to find a few plants which seem of sufficient interest to deserve notice, and I have now much pleasure in submitting the following notes:—

Fumaria pallidiflora, Jord.—Two or three luxuriant plants by the roadside between Cheddar and Axbridge. I think that this is a new record for H. C. Watson's vice-county 6 (N. Somerset).

Draba muralis, L.—This plant seems to be much more abundant on Mendip than has usually been supposed. The known localities for it were E. Harptree, Emborough, and Mells; but during last spring I gathered it in many places, extending from West Horrington, near Wells, to Chilwood, a village about seven miles to the south of Bristol. In some localities it was most abundant; notably so at Stone Easton, where it covered nearly every wall, almost to the exclusion of the usual common species.

Althæa hirsuta, L.—This very rare plant still grows in the locality indicated by Mr. Baker (Journ. Bot., 1875, p. 358); and after examining the station I entirely agree with him in considering it "a true native."

Trifolium maritimum, Huds.—The interest of this plant centres in its stations. Here, in Mid Somerset, it seems to mark very curiously the position of the old shore-line, at the time when Glastonbury Moor was still an arm of the sea. It grows in an old lane about three miles west of Wells, where it was kindly shown to me by Miss Livett. This lane runs along the side of a hill which slopes somewhat steeply down to the moor. This station is about twelve miles in a direct line from the sea. I find it also in the parish of Barton St. David, marking the extreme limit of the moor, at a distance of over seventeen miles from the sea. If I am right in supposing "Barnwell," in the 'New Botanists' Guide,' to be a misprint for "Banwell," this locality also will prove to be an inland one. The species seems to be frequently confused with *T. ochroleucum*, L. Other relics of the old maritime Flora may probably be found in *Apium graveolens*, L., extremely abundant about the further extremity of the moor, and in *Scirpus maritimus*, L., which I have seen in King's Sedgemoor, fourteen miles from the sea.

Lythrum Hyssopifolia, L.—About fifteen months ago I had to make up the garden paths at Baltonsborough Parsonage with gravel brought from Wilts, and this summer I was much surprised at finding two plants of this species come up on the new gravel. I have not yet seen it actually growing at Wells.

Many other interesting plants have passed under my notice during the past season, but I refrain from noticing them in this place, as I am now engaged in collecting materials for a Flora of Somerset. I need hardly add, that any assistance which I may receive from fellow-workers in the same field will be most gratefully welcomed. My address is 22, Chamberlain Street, Wells, Somerset.

ON FOUR NEW BROMELIADS AND A NEW *STEGOLEPIS* FROM BRITISH GUIANA.

By J. G. Baker, F.R.S.

During a recent excursion to the celebrated Kaieteur Cataract, on the Potaro River, in British Guiana, Mr. G. S. Jenman, the energetic curator of the Demerara Botanic Garden—amongst many other plants of great interest, many of them gathered previously by Schomburgk, Appun and Im Thurn, but some of them new—obtained specimens of the following novelties. Two of them, the large fruticose Bromeliad and the *Stegolepis*, were both gathered by Mr. Im Thurn in 1878, but, as so often occurs, in neither case were the specimens of a single gathering complete enough to settle properly the systematic position of the plants.

Æchmea (*Pironneava*) brassicoides, n. sp.—Rhizome creeping freely, throwing out numerous buds, till the plant forms a mass. Leaves horny in texture, green and glabrous on both back and face; dilated base oblong, half a foot long, 3–4 inches broad; lamina lanceolate, above a foot long, 2½–3 in. broad at the middle, narrowed gradually to a deltoid tip, margined with close small pungent deltoid prickles. Peduncle a foot and a half long, piercing through its large erect oblong-navicular lowest leaf, which is above half a foot long and coloured bright red on both sides; the leaves next succeeding much smaller, oblong, obtuse and imbricated; the upper more distant, lanceolate, thinner in texture and coloured pale pink, the exposed upper part of the peduncles white-floccose, like the rachis of the panicle. Inflorescence a panicle, half a foot long, with numerous short sessile spicate branches, each containing not more than 3–5 tightly packed multifariously-arranged flowers, the lowest spike subtended by a pink lanceolate bract, 2–3 in. long, the bracts of the upper spikes with a long linear cusp and not more than an inch long. Ultimate bracts subtending each flower lanceolate-acuminate, with a dilated base, white-floccose, ¾–1 in. long. Ovary very small. Sepals linear. oblong, horny, imbricated, floccose on the back, ⅜ in. long, obtuse, with a small cusp. Petals yellow, with a claw as long as the sepal, and an oblong lamina ⅛ in. long. Genitalia not protruded, the filament reaching to the top of the petal-claw and oblong anther ⅛ in. long. Style as long as the petals.—Kaieteur Savanna, *Jenman* 957! A near ally of the West Indian *Æchmea aquilegia*, Griseb. (*Bromelia aquilegia*, Salisb. Parad., t. 40), which in my synopsis of the genus (Journ. Bot. 1879, p. 132) I have wrongly cited under *Æ. bracteata*. They really belong to two different sections, the flowers being arranged in *aquilegia* multifariously and in *bracteata* distichously. The name *brassicæformis* is suggested by a note of the collectors that the inner leaves form a heart like an early spring-cabbage.

Æchmea (*Hohenbergia*) Jenmani, n. sp.—Dilated base of the leaf oblong, brown on both sides, rigid in texture, 8–9 in. long, 3–4 in.

broad. Lamina horny in texture, green and glabrous on both surfaces, $1\frac{1}{2}$ ft. long, 2 in. broad at the base, narrowed gradually from the middle to a deltoid-cuspidate apex, margined with hooked brown horny prickles, the lower $\frac{1}{6}$ in. long, the upper growing gradually smaller. Inflorescence a panicle, with deltoid nearly sessile branches 3–4 in. long and broad, subtended by large scariose lanceolate bracts which are not at all brightly coloured; branchlets flexuose, the upper simple, the lower forked, angled, flexuose and thinly lepidote, bearing each five or six spaced sessile erecto-patent flowers. Flower-bracts oblate orbicular, not more than $\frac{1}{6}$ in. long, minutely cuspidate. Ovary cylindrical-trigonous, $\frac{1}{2}$ in. long, thinly lepidote; sepals coriaceous, lanceolate-deltoid, shorter than the ovary, minutely cuspidate. Petals with a claw as long as the sepals and an oblong lamina $\frac{1}{4}$ in. long. Stamens and style included.—Essequebo River, British Guiana, *Jenman* 903. A near ally of *Æ. platynema*, figured by Gaudichaud under the name of *Pironneava platynema* in the 'Atlas' accompanying the Botany of the 'Bonité' voyage, tab. 64.

Brocchinia cordylinoides, Baker (*Cordyline micrantha*, Baker in Gard. Chron., xiv., 243, 1880).—Trunk simple, attaining a height of 12–15 feet, and a diameter of 6–8 inches, furnished below the rosette with the close ragged bases of the fallen leaves. Leaves in a dense rosette at the top of the trunk, lorate, 3–4 feet long, rigid in texture, without any prickles on the margin, obtuse at the tip, green and obscurely lepidote on both surfaces, the middle 6–8 in. and the dilated base 9–10 in. broad. Inflorescence 6–8 feet long, a deltoid panicle with spreading peduncled copiously compound branches, the central ones $1\frac{1}{2}$–2 ft. long, subtended at the base by large lanceolate bracts; ultimate branchlets almost spicate, laxly flowered, 2–5 in. long; flowers all single, on very short pedicels subtended by minute deltoid or lanceolate bracts. Flowers $\frac{1}{6}$ in. long, with a deltoid ovary, the sepals and petals yellowish, equal in length and similar in texture, $\frac{1}{8}$ in. long, the former oblong and pale yellow, the latter orbicular-unguiculate and brighter yellow, both obtuse. Stamens rather shorter than the petals, with minute orbicular anthers and flattened filaments, the three inner adhering half-way up to the claw of the petals, the three outer springing from the very base of the sepals. Style entire; stigma minute, capitate, spirally twisted. Capsule triquetrous, $\frac{1}{4}$–$\frac{1}{3}$ in. long, crowned by the persistent accrescent sepals and petals. Seeds numerous, flat, $\frac{1}{6}$ in. long, with an oblong nucleus and a lanceolate stramineous tail at each end.—Kaieteur Savanna, Potaro River, British Guiana; abundant, forming thickets acres in extent, *Jenman* 1196! This remarkable plant was discovered by Mr. Everard Im Thurn in 1878.* He brought home a photograph, in which it was a prominent object, which was reproduced in the 'Gardener's Chronicle' (xiv., p. 241); but, as he had no leaves and the flowers were only in young bud, Mr. Thiselton Dyer wrote specially requesting Mr. Jenman to try to procure the plant again, a commission which he has now successfully accomplished. It is to Mr. Bentham that we are indebted for its identification with the genus *Brocchinia*, which is known to us in England only by the description by the younger Schultes (Roem. et Schultes Syst. Veg., vol. vii., p. 1250) of a different species gathered long ago by Martius in the Araracoara Mountains. It proves to be one of the most tree-like of all the known Bromeliads, reproducing in this order the habit of a *Cordyline* or *Fourcroya;* but it is very interesting that Mr. Jenman has also discovered a third species, of which the habit is quite that of an ordinary *Tillandsia* or *Catopsis*.

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* [Specimens from the same locality are in the National Herbarium, British Museum, collected by Appun prior to 1872.—Ed. Journ. Bot.]

Brocchinia reducta, n. sp.—Terrestrial, acaulescent. Leaves very few to a rosette, remaining erect and folded round each other and the peduncle, lorate, glabrous, 1½ ft. long, 2 in. broad at the middle, obtuse, without any marginal prickles. Peduncle a couple of feet long, slender, terete, furnished with several small ovate adpressed reduced leaves. Inflorescence a lax rhomboid panicle 8–12 in. long, with few erecto-patent subspicate branches, simple or the lowest occasionally forked; branchlets pilose, the flowering part not more than 3–4 in. long; flowers all solitary; bracts minute, ovate. Whole flower not more than ⅙ in. long. Sepals and petals about as long as the pilose oblong-cylindrical ovary, the former oblong and the latter orbicular. Stamens and style as in the other species. Capsule not seen.—Kaieteur Savanna, *Jenman* 873!

Stegolepis ferruginea, n. sp.—Dilated base of the leaf oblong, broadly rounded at the apex, rigid in texture, 5–6 in. long; lamina ensiform, also rigid in texture, green and glabrous on both surfaces, 2 ft. long, 1½ in. broad, narrowed to an acute tip and at the top of the dilated base to less than half an inch, the midrib distinct on both surfaces in the lower part of the leaf, but lost towards the top. Scape 1½ ft. long, slender, strongly angled. Heads terminal on the scapes, consisting of about 20 oblong clusters ¼ in. long, each composed of about 20 imbricated rigid ferruginous bracts and a terminal flower. Sepals 3, oblong-lanceolate, acute, similar in texture and colour to the bracts, ⅙ in. long. Petals 3, oblong-unguiculate, united at the base. Anthers 5, lanceolate, sagittate at the base, ⅛ in. long, with rugose waved valves dehiscing by a terminal pore and a short cylindrical filament springing from the cup formed by the base of the united petals. Ovary globose, with a short filiform style.—Kaieteur Savanna, *Jenman* 956!; and gathered also in 1878 by Mr. Im Thurn. Quite similar in structure to the only other species of the genus, S. *guianensis*, Klotzsch, which was also gathered by Mr. Jenman, and is fully described in Kornicke's recent Monograph of the Rapateaceæ (Linnæa, vol. xxxvii., p. 481), but much more slender in habit, with smaller heads, bracts, and flowers.

THE TONGA PLANT (*EPIPREMNUM MIRABILE*, SCHOTT).

BY N. E. BROWN, A.L.S.

IN the 'Gardener's Chronicle,' 1882, xvii., p. 180, I published a general account of the Tonga Plant, promising elsewhere to publish the botanical details of its very involved synonymy; this promise I now keep, but as there are probably many readers of the 'Journal of Botany' who may not have the 'Gardener's Chronicle,' I have thought it would be useful to embody the account therein published.

Tonga is a vegetable drug, and the material from which it is prepared is stated to consist of a mixture of bark and fibrous matter, the botanical origin of which was for some time unknown. Some months back, however, an interesting account of the plants producing this drug was published in the 'Gardener's Chronicle,' xvi., p. 1107, where it is stated, upon the authority of Baron von Mueller, that Tonga is a product of *Premna taitensis* and *Rhaphidophora vitiensis*. This account was communicated by Mrs. Glendinning, and with it she also sent specimens of the Tonga plants, which were kindly presented by the editor of the 'Gardener's Chronicle' to the Kew Museum. In the 'Report of the Royal Gardens, Kew,' for 1880, published towards the end of last year, it is stated that Mr. E. M. Holmes, curator of the Museum of the Pharmaceutical Society, also arrived at the conclusion that *Rhaphidophora vitiensis* was probably one of the plants from which Tonga is in part derived, and that Mr. C. W. Hansen, whilst in Fiji, was enabled to confirm this determination as correct, and to add that he (Mr. Hansen) believed the other plant that enters into the composition of Tonga to be *Premna taitensis*.

We thus have evidence from two independent sources that the drug Tonga is a product partly derived from *Premna taitensis* and partly from *Rhaphidophora vitiensis*; and now that we know this, it is interesting to know that one of these plants, and that most probably the one to which the reputed medicinal virtues of Tonga are due, has been in cultivation in this country during the past four or five years. For upon seeing the specimens of the Tonga plants sent by Mrs. Glendinning, I immediately recognised the Aroid as being identical with a plant cultivated by Mr. W. Bull, of Chelsea, of which I had dried specimens for the Kew Herbarium.

As this plant is involved in great confusion botanically, I think it better that I should here give full details concerning it.

Mr. Bull's plant was introduced from the Fiji Islands by way of the Botanic Garden at Sydney, New South Wales, and it has behaved exactly as described in Mrs. Glendinning's note (though I may here observe that this mode of gradual development and change of form in the leaf, as described below, is by no means rare in the groups of Aroids to which it belongs). When first received the stem was very slender, about one-eighth of an inch thick, and the leaves were very small and quite entire; but upon being allowed to creep up a wall or some other support, the stem rapidly thickened upwards until it became about one inch in diameter, and produced leaves, which, with the gradual thickening of the stem, by degrees passed from their small entire state to a larger and more and more divided form, until finally they became pinnatisect, and including the petiole were from two to three feet in length. In June, 1878, the plant flowered, and a specimen of it was brought to me to name. I did not dissect it with any special care at the time, but a rough dissection showed that there were but about two basal ovules in each ovary, and therefore it would be either a species of *Epipremnum* or of *Monstera*, most probably of the former; there was, however, no specimen in either genus in the Kew Herbarium that would match with it, and it was not compared with the genus *Rhaphidophora*, since that genus, as at present understood, has a more or less completely two-celled ovary, with numerous ovules in each cell Had I compared it with that genus I should doubtless have discovered its identity with *Rhaphidophora vitiensis*, Schott, a typical specimen of which is in the Kew Herbarium, and with *R. pinnata*, Schott, which is the same plant. Though Engler, in his monograph of the order (DC. Monog. Phanerog. ii., p. 244), places *R. pinnata* as a synonym of *R. pertusa*, Schott, with which, of course, it has nothing whatever to do, whilst *R. vitiensis* is made a variety of the same species. At the time it was thought that Mr. Bull's plant might be *Monstera dilacerata*, Koch, with which the leaves of a young stage of growth agree well, even to the small pellucid dots and perforations scattered along the region of the midrib; but according to Koch's description of that species in the 'Wochenschrift,' xiii., p. 33, it cannot be the same plant.

I have above indicated that the Tonga plant does not belong to the genus *Rhaphidophora* as at present understood—that is, as it has been understood and characterised by Schott, Engler, and others; I have also said that it is identical with *R. pinnata*, as has already been declared by Mr. Bentham in the 'Flora Australiensis,' vii., p. 156 (and I do not doubt that Mr. Bentham is quite correct in considering the Tropical Australian *R. Cunninghami*, Schott, to be the same species, though complete specimens of this are still a desideratum; perhaps some Australian readers of this will kindly take the hint by sending full and complete specimens to Kew). The leaves, &c., of the two so-called species are quite the same, and on dissection I find the ovary of *R. pinnata* is just as in the Tonga plant, being one-celled with two anatropous ovules, which are seated one on either side at the base of a parietal placenta that projects about one-third across the cell. Now this structure is quite at variance with the characters assigned by Schott and by Engler to the genus *Rhaphidophora*, but it is quite identical with that of the genus *Epipremnum*, Schott. Turning to this genus, under *E. mirabile* we have quoted as synonyms, *Scindapsus decursivus*, Zollinger (No. 569), and *Rhaphidophora lacera*, Husskarl, in part. Zollinger's specimens (No. 569) I find I had placed (in the Kew Herbarium), in the genus *Rhaphidophora*, having found them to be identical with *R. pinnata*, and thus it happened that when I looked in the genus *Epipremnum*, in 1878, for Mr. Bull's plant, I did not match it. On looking up the original description of *R. lacera*, I find that this species is the type of the genus *Rhaphidophora*, Hassk., and was published in two places by Hasskarl, in the year 1842, *viz.*, in the 'Tidjschrift,' ix., p. 168, and in the 'Flora,' 1842, ii., Bieblatter, p. 11; in both places reference is made to Hasskarl's 'Catalogus Plantarum in Horto Botanico Bogoriensi,' but that work was not published until 1844, although the MSS. of it had been sent long previously. Hasskarl has also described the plant at greater length in his 'Plantæ Javanicæ Rariores,' p. 155, published in 1848. In the first three works quoted, Hasskarl describes the ovary as "one-celled, one-ovuled," but in the book last-mentioned this is altered to "two-celled, with two ovules in each cell." In both cases Hasskarl was wrong, for there can, I think, be no possible doubt that the plant described by Hasskarl as *Rhaphidophora lacera*, is the same as *Epipremnum mirabile*, Schott, and that Hasskarl must have failed to make out the true structure of the ovary. Had he been right in either case the genus would not have been a new one, as the character of having a one-celled, one-ovuled ovary would make the plant a *Scindapsus*, and that of two-celled, with two ovules in each cell, a *Monstera*. The true and normal structure of the ovary I have already described. Besides the above errors in his characters of the genus, Hasskarl unfortunately quotes as a synonym of *R. lacera*, the *Pothos pertusa*, Roxb., and from this circumstance no doubt the confusion of the genus has arisen; for Schott took *Pothos pertusa*, Roxb., as the type of Hasskarl's genus, *Rhaphidophora* (see 'Bonplandia,' 1857, v., p. 45), though there is every reason to believe that Hasskarl never saw Roxburgh's *Pothos pertusa*, since in the 'Tijdschrift' he quotes it doubtfully as a synonym of *R. lacera*, ("an *Pothos pertusa*, Roxb., i., 455 ?"), ; and if he had seen and examined it he could never have failed to note that *Pothos pertusa* differed from his plant in having a two-celled ovary with axile placentas and numerous ovules, as correctly described by Schott, though the latter was at the same time wrong in considering that plant as the type of the genus *Rhaphidophora*. It is somewhat singular that Schott should have perceived that Hasskarl had (by placing *Pothos pertusa*, Roxb., as a synonym) confused two plants under his *R. lacera*, since Schott quotes *R. lacera* partly as a synonym of *R. pertusa*, Schott ('Prod. Aroid.,' p. 382), and partly as a synonym of *Epipremnum mirabile* Schott ('Prod. Aroid,' p. 389), and yet not have perceived that the character given for the genus *Rhaphidophora* and the description of *R. lacera* did not at all agree with *Pothos pertusa*, Roxb., whilst they very nearly agree with the plant Schott called *Epipremnum mirabile*. It is still more remarkable that Schott, who was usually a very acute and accurate observer, should twice have placed this plant in the genus *Rhaphidophora*, as he understood it, without noticing that it was identical with his *Epipremnum mirabile*; possibly he did not dissect the specimens, or failed to make out their structure, for the ovaries of this group of Aroids are very difficult to dissect in a dried state, requiring no small stock of patience and no little skill to arrive at a correct conception of their structure and contents.

As there can be no doubt the plant upon which Hasskarl founded his genus *Rhaphidophora* is identical with *Epipremnum mirabile*, Schott, and as *Rhaphidophora* is the older name by fifteen years, having been made in 1842, whilst *Epipremnum* was not characterised until 1857 (see 'Bonplandia,' v., p. 45, the type being *E. giganteum*, Schott), therefore on the one hand, according to the rule of priority, the name *Rhaphidophora* should take the place of *Epipremnum*, and a new generic name be given to those plants which Schott erroneously called *Rhaphidophora;* but on the other hand, as Hasskarl was wrong as to the most important character for his genus, and wrong as to synonymy, and as Schott did correctly characterise the genera *Epipremnum* and *Rhaphidophora* as he understood the latter, and the generic name *Rhaphidophora* is now so well known in connection with those plants which Schott placed in it, that after taking counsel of Mr. Bentham and Sir Joseph Hooker, who has recently worked up the genera of Aroids, for the 'Genera Plantarum,' it has been decided all round that it is better to keep the generic names as they at present stand in our books (except that Schott should stand as the authority for the genus *Rhaphidophora*, and Hasskarl's *Rhaphidophora* be placed as a synonym of *Epipremnum*), rather than change the generic names now, since no good purpose would result from such a change, but merely more lengthy synonymy, and possibly more confusion.

The Tonga plant itself is an ornamental climber of rapid growth, with bold dark green pinnatisect leaves in the adult stage, and large inflorescences, resembling those of a *Monstera* or *Rhaphidophora.* It is a very suitable plant for trailing up pillars, trunks of palms, tree-ferns, &c., or the back wall of a stove; and besides its ornamental character it is specially interesting for the manner in which the plant changes in appearance as it develops from its juvenile state with small entire leaves, to its adult flowering state with large pinnatisect leaves; as well as for its medicinal qualities, which appear to have long been known to the natives of the countries the plant inhabits, since Rumphius, in his 'Herbarium Amboinense,' v. p. 489 (where at t. 183, f. 2, a very good figure of the plant is given), states that the natives of Java and Baly cook "the horns" (terminal buds of flowering stems) a little over a fire, bruise them and squeeze out the juice, which is given to lean and feeble horses and cows, and it is said to cure them and bring them into a fat and healthy condition. The internal substance is pounded and used in the form of a poultice as a remedy for sprains. It is also used as a dentrifice to whiten the teeth, the heart or internal substance being chewed with pinanga and chalk. Cows feed upon the leaves, especially during the hot months when the fields are destitute of grass; they seem to be very fond of them, and also of the stems, as they are not acrid. Altogether the Tonga plant appears to be a rather useful one, all the more so considering the order to which it belongs, whose members are more noted for their doubtful and poisonous qualities than for their good and useful ones.

The following is a description of the Tonga plant, chiefly compiled from Mr. Bull's specimen, together with full synonymy :—

Epipremnum mirabile, Schott, 'Genera Aroidearum,' p. 79.—Stem climbing, in juvenile plants slender, about 1-10th inch thick, in adult flowering plants about 1 inch thick, clothed towards the apex with the persistent fibrous remains of the scale-leaves.* Smallest leaves of juvenile plants, with a petiole 1¼–1½ inch long, vaginate for about half its length, and a lamina 1–1½ inch long, ¾–1 inch broad, obliquely cordate-ovate, acute or shortly cuspidate, entire, without perforations ; as the plant gets older the petioles elongate and the lamina increases in size, becoming obliquely oblong-ovate, or lanceolate-oblong, acute or shortly acuminate, with small perforations or pellucid spots, mostly arranged along the sides of the midrib ; from being quite entire these gradually pass to a more and more pinnatifidly segmented form, until the adult stage is reached. Petioles of adult leaves stout, 8–15 inches long, including the 1–1½ inch long geniculus, convex on the back, channelled down the face, and vaginate nearly up to the geniculus. Lamina 14–20 inches long, 7–12 inches broad, shining dark green, oblong or elliptic-oblong in outline, acute, cordate or subcordate at the base, more or less oblique, pinnatisect nearly to the midrib, segments varying from 4–10 in number on each side, but more numerous on one side than on the other, straight or somewhat falcate, all except the lowest of about equal breadth throughout their length (usually 1–2 inches broad), apex truncate or somewhat convexly truncate, the upper edge produced into an acuminate point, the terminal lobe more or less diamond-shaped, much larger than the rest. Primary lateral nerves 2–3 in each of the basal segments, one only up the centre of the other segments, or sometimes two or more, when two or more segments are united into one, spreading, running out straight almost to the margin, and then curved into the acuminate point ; midrib and veins rather impressed above, very prominent and rounded beneath. Peduncle 4–6 inches long, terete, Spathe 4–4½ inches long, ovate, boat-shaped, shortly cuspidate-acute, green outside, puce-coloured inside. Spadix sessile, much shorter than the spathe, cylindric obtuse, green, about two-thirds of an inch thick. Ovaries cuneate, sub-hexagonal, truncate, one-celled with a septiform placenta projecting one-third across the cell, bearing two ovules, one on either side at its base (rarely only one ovule) ; stigma sessile, linear. Schott, 'Prodromus Aroidearum,' p. 388! ; Engler, in DC. 'Monog. Phanerog.,' ii., p. 249!; *Rhaphidophora lacera*, Hasskarl, in 'Tijdschrift voor Natuurlijke Geschiedenis en

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* If I understand the descriptions aright of the various authors who have described this plant, I think they mean to imply that these persistent fibres are the remains of the vagina of the foliage-leaves; but this is not the case, for they are the remains of cataphyllary leaves, which are not developed until the plant flowers, and accompany a change from a monopodial to a sympodial mode of growth of the stem, exactly as occurs in *Philodendron*, for example, *P Simsii.*

Physiologie,' ix., p. 168; in 'Flora,' 1842, ii.; 'Bieblatter,' p. 11; 'Cat. Hort. Bogor.,' p. 58; and 'Plant. Jav. Rar.,' p. 155 (excluding synonym). *R. pinnata*, Schott, in 'Bonplandia,' 1857, v., p. 45; 'Prod. Aroid.,' p. 384!; Bentham, 'Flora Australiensis,' vii., p. 156. *R. vitiensis*, Schott, in 'Bonplandia,' 1861, ix., p. 367!; and in Seemann's 'Flora Vitiensis,' p. 286! *R. pertusa*, var. *vitiensis*, Engler, in DC. 'Monog. Phanerog.,' ii., p. 244!; *R. Cunninghami*, Schott, in 'Bonplandia,' 1861,' ix., p. 367 (most probably). *Pothos pinnata*, L., 'Sp, Plant.,' ed. 2., ii., p. 1374 (Rumphius, 'Fl. Amboinensis,' v., p. 489, t. 183, f. 2); Roxb., 'Fl. Ind.' (ed. 1820), i., p. 456!; Willd., 'Sp. Plant,' i., pt. 2. p. 686. *Scindapsus decursivus*, Zoll., 'Pl. Jav.,' p. 82, No. 569! *S. pinnatus*, Schott, 'Melet.,' i., p. 21!; Decaisne, 'Descr. Herb. Timor.,' p. 39; Kunth, 'Enum. Pl,' iii., p. 63; and probably also *Rhaphidophora pinnatifida*, Schott, in 'Bonplandia,' 1857, v., p. 45; 'Prod. Aroid.,' p. 384. *Scindapsus pinnatifidus*, Schott, 'Melet.,' i., p. 21; Kunth, 'Enum. Pl.,' iii., p. 63. *Pothos pinnatifida*, Roxb., 'Fl. Ind.' (ed. 1820), i., p. 476.

Widely distributed, inhabiting Java, Baly, Amboina, Timor, Fiji Islands, Tropical Australia, and in the Kew Herbarium is a specimen of what I take to be the same species from Whampoa, China (Hance, no. 15,600.)

ZYGODON FORSTERI, Mitten, IN ESSEX.

By E. M. Holmes, F.L.S.

On the occasion of the annual Fungus Foray in Epping Forest, on the 23rd of October last, I met with this rare moss in fructification; and as its occurrence in Essex has hitherto been only conjectural, its rediscovery in that county seems worthy of record.

In Wilson's 'Bryologia Brit.,' p. 194, Walthamstow and Sussex are mentioned as two localities in which it had been found. A much more correct account might have been given had Mr. Wilson not ignored Mr. Mitten's remarks, published four years previously, in the 'Annals and Magazine of Natural History' for 1851 (2nd series, viii., 322).

The history of the discovery of this plant in Britain I believe to be as follows:—Mr. T. F. Forster found a specimen of the plant on *a felled tree in a timber yard* at Chapel End Lane, Walthamstow, there being no record where the tree was obtained. The specimens gathered by him were distributed to Dickson, Borrer, Sir J. E. Smith, and others. One of these occurs in Dickson's Herbarium, and another among the original specimens used for 'English Botany,' both of which collections are in the Botanical Department of the British Museum; but neither of these specimens bear any date on the label. A third specimen exists in Mr. Borrer's Herbarium at Kew. The plant must, however, have been collected previously to 1794, as Dickson's 'Fasciculi' were published in that year. There are no specimens of the plant in Wilson's Herbarium (also in the British Museum), nor in that of Mr. Jenner, now in the possession of Mr. C. P. Smith of Brighton. That gentleman informs me that Jenner's plant was identified by Mr. Mitten. Mr. Mitten kindly referred me to his paper, above cited, and tells me that Mr. Jenner gathered the moss during an extended ramble, but whether in Sussex, Hampshire, Kent, or Surrey, it could only be conjectured, as the large packet of mosses among which the specimen was detected by Mr. Mitten bore no label, and the only clue to the locality where it was gathered lay in the fact that the *Zygodon Forsteri* was wrapped in a billhead with a Hastings address upon it.

Until a few years ago, therefore, when Miss I. Gifford found the plant at Minehead, no exact locality was known in Britain for this species. In the locality pointed out to me by that lady the moss grew on the top of an old stump behind a gate in a field, and bore some resemblance to a *Pottia*, for which it was at first mistaken by Miss Gifford, being subsequently recognised by Mr. H. Boswell, of Oxford, to whom she sent it.

I found the moss in Epping Forest on the root of an old tree where water collects in little depressions among the roots. It seems to prefer damp timber; in size and habit of growth it resembles *Tortula muralis*, for which it might easily be mistaken if the short seta and furrowed capsule were not noticed. Neither at Minehead nor in Epping Forest did I see more than a single patch, so that it does not appear to be a gregarious species like *Z. viridissimus* and *Z. conoideus*. The leaves in the moist state are remarkable for their rigid, dark green, succulent appearance. On the Continent also this plant appears to be a rare southern species. It has been found growing on the poplar, cork, oak, holly and elm. I did not notice on what tree it occurred in Epping Forest, but believe it to have been beech.

LEONARD PLUKENET, "QUEEN'S BOTANIST."

By B. Daydon Jackson, Sec. Linn. Soc.

Very little of the life-history of Leonard Plukenet is known to the botanic world, although nearly every page of Linnaeus's 'Species Plantarum' refers to some one or other of his works. I am indebted to the kindness of Mr. T. C. Noble, who is engaged in a thorough search through the registers of the parish of St. Margaret's, Westminster, for a very large number of entries extracted therefrom, by means of which a great deal of fresh information is afforded regarding our author. With the hitherto-unpublished material, I shall incorporate some that has long been common property, so as to exhibit, as far as the present occasion serves, a fairly complete account of the man.

The portrait of Plukenet which is prefixed to his 'Phytographia,' 1696, has this legend:—"Leonardi Plukenett, D.M., Effigies, ætat. suæ, 48 Anno Dom. 1690." From this inscription Sir J. E. Smith, in his article on Plukenet in Rees's 'Cyclopædia,' fixed upon the year 1642 as the date of his birth; but we are now able to get much nearer to the true date, for the registers above mentioned, under date of January 4th, 1641–2, contain this baptismal entry:—"Leonard Plucknett, s. to Robt. by Elizabeth his wife," Following entries of his brothers and sisters are these:—

1643. Oct. 25. Robert Plucknett ....
1645. Dec. 27. Eliz. Plucknett ....
1651. June 13. Robt. Plucknett ....
1653. Sept. 27. Alice Plucknett ....

The large number of entries of the family of Plucknet, Plucknett, Plukenett, or Plukenet, as they varied the spelling, makes it somewhat puzzling to unravel the collateral relationships, which indeed, for our purpose, it is hardly worth our while to do. Amongst the 67 extracts which Mr. Noble's assiduity has placed in my hands, I find that the *second* Robert Plucknett was buried July 1st, 1651, followed by Alice, April 3rd, 1654.

Of Leonard Plukenet's early life and education we know practically nothing. Pulteney suggests Cambridge as the scene of his University training, but the matriculation lists of that time do not contain his name. Plukenet himself indeed mentions Mr. Willam Courten and Dr. Uvedale, of Enfield, as his fellow pupils, but as we are ignorant of their early lives we are not thereby greatly assisted in our quest. Both Courten and Uvedale were amongst Sloane's friends, and their collections are to be seen in the volumes constituting the Sloane Herbaria. His degree of M.D. was probably taken at some foreign university, and he probably did not practise in England, since we do not find his name in Munk's Roll of the College of Physicians, as would almost certainly be the case were he seriously prosecuting his medical profession.

The Sloane MSS. are of very little service in throwing any light upon Plukenet's life; it is known, however, that in 1672 or thereabouts he was living in St. Margaret's Lane, near Old Palace Yard, Westminster, where he seems to have dwelt all his life. The attachment of the Plukenet family to St. Margaret's parish is certainly curious. The supposition that our author was in straitened circumstances is not borne out by the abstract of the will which is given hereafter; he was clearly in sufficiently easy circumstances to allow him to apply himself to botany with entire devotion, and also to provide for his children. When he was married I do not know, but the baptismal entries as to his twelve children are as under:—

1670-1. March 7. Eliz. Plucknet d. to Lennord by Letitia.
1672. Nov. 7. ffrances Plucknett d. to Lennord by Leticie.
1674. April 19. Leticie Plucknett d. to Lennord by Leticie.
1675. May 3. Isabella Plucknett d. to Leonard by Letitia.
1676. August 11. Leonard Plukenett s. to Len: by Letitia.
1677-8. Jan. 8. Robt. Plukenett son to Len. by Letitia.
1680. Nov. 7. Alan Plucknett s. to Len: by Letitia.
1681. Dec. 22. Elizabeth Pluknett d. to Dr. Leon: by Letitia.
1683-4. Jan. 18. Sophia Plukenett d. to Dr. Leonard by Letitia.

1685. May 26. Brooke Plukenett d.* to Dr. Leonard by Letitia.
1686. Aug. 20. Walldroon Plukenett d. to Dr. Leonrd. by Letitia.
1687. Dec. 22. Hugh Plukenett s. to Dr. Leonard by Letitia.

Among the burials there are three of Elizabeth Plucknett, dated April 4, 1679; January, 17, 1681–2; and September 3, 1683; one of these may have been our author's mother, but his daughter of that name survived him (see his will below). We can more readily identify some of these:—

1680. Nov. 24. Allan Plukenett.
1685. March 26. Sophia Plukenett.
1688. Dec. 6. Waldron Plukenett.
1693. Sept. 6. Mrs. Letitia Pluckenett.
1707. June 12. Mrs. Letitia Plucknett.

The wife Letitia survived her husband, and, as will be seen, proved his will subsequent to the second of these dates. One almost certainly refers to the daughter, but which entry I cannot determine.

The issue of the second generation appear in these entries:—

1708. Dec. 30. Letitia Pluckenet d. to Leonrd. (Gent) by Mary.
1709. Dec. 16. Anne Pluckenett d. to Hugh (Gent) by Mary.
1711. June 26. Robert Pluckenett s. to Robert (Gent) by Susa 3rd.
1711. Dec. 17. Leonard Pluckenett s. to Leonrd. (Gent) by Mary. Nov. 20.
1712-3. March 20. Sophia Pluckenett d. to Leond. Gent. by Mary. 7th.
1715. Dec. 1. Brunswick Hanover Pluckenett s. to Leonrd. Gent. by Mary. Nov. 2.
1717. Dec. 11. Carolina Pluckenett d. to Leonrd. Gent. by Mary. Nov. 14.
1736. May 22. Hugh Plucknett s. to Hugh by Ellinor. April 20.

Dr. Leonard Plukenet must have studied Botany for some years previous to 1688, else his assistance to Ray in the second volume of the 'Historia Plantarum' could not have been so handsomely acknowledged; Ray went further in the preface to his 'Synopsis' (1690), and spoke of him as a botanist of the highest rank. In the same year, writing under date of May 17th, William Sherard wrote to Dr. Richardson, of North Bierley, that—"I hear Dr. Plukenet has the promise of the place at the King's garden." From other sources this seems to have been the superintendence of the Royal Garden at Hampton Court, Queen Mary, Consort of William III., being his patron, and granting him the title of Queen's botanist.

In the next year, 1691, when fifty years of age, he brought out his earliest work, being the first two parts in quarto of his 'Phytographia'; in 1692 appeared the third part, and in 1696 he issued the fourth part, with an index to the whole. The work consisted of plates, with fairly characteristic figures of the plants he acquired from various quarters, engraved by different hands on copper, with the names he gave them at the foot of each plate; in the last part, however, the names are not so given, but are cited in his 'Almagestum Botanicum,' a book entirely in letterpress, drawn up in alphabetic order. The 'Mantissa' to the last-mentioned came out in 1700, with twenty-two more plates, and a full index to all preceding works of the author. His last book, entitled 'Amaltheum,' was issued in 1705, with 104 plates, bringing up the total number to 454; this was helped out by a contribution of fifty-five guineas from various friends. His complete works in four volumes were reissued in 1720 and 1769; a Linnean key to Plukenet's works was published by Dr. Giseke, of Hamburgh, in 1779.

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* This must be a slip of the pen: compare the will cited below.

Plukenet's dried plants are now in the British Museum, having after the botanist's death passed into the possession of Sir Hans Sloane.

He died on July 6th, 1706, and was buried in the Chancel of St. Margaret's Westminster, being entered as:—

> 1706. July 12. Dr. Leonard Plukenett, the Queen's botanist.

His will gives us much information regarding the man himself and his family, so it will very fitly come in here:—

Abstract of the Will of Dr. Leonard Plukenett, of Westminster. Dated 16 *Nov.*, 1705. *Proved* 16 *July*, 1706. (Register, "Eedes," fo: 154, P.C.C., London).

"In the name of God, Amen," &c. "I Leonard Plukenett of the parish of St. Margarett's Westminster in the County of Middlesex Doctor in Physick," &c. Commits his soul to God and his body to be buried. "Unto my deare and loving wife Letitia Pluknett" her executors &c. three messuages or tenements "in Sackville Street" three others "in Ruperte Streete" two others "in Angel Courte in Kinge Streete" all in the parish of St. James Westminster to hold to her &c. for the respective terms. Also to her all my household goods, plate and furniture, "my study of Bookes which cost me some hundreds of Pounds and which I would have her expose to sale by auction or otherwise to make money of. And I give to my said wife all my hortus siccus Books of inestimable value to persons curious in Botany. And I give her all my Copper phytographick plates which I would advise her not to expose to sale till she has vended goode parte of the copies now lying by me least buying her plates at a small Price some persons print upon her and undersell her all which copies I give her and as the whole sett is now seaven Pounds I advise her to sell them at halfe rates by 20 setts at a time." Also to her £500 in money.

My Messuage or farm called "Plukenett's Farme" with appurtenances "in the parish of Rickmansworth" and Herts, and Chalfont St. Peters, Bucks. Also four messuages at the north side, and three on the south side of "Rhenish Wine yard near Kinge Street in the parish of St. Margaret's Westminster" together with dye house and stables "unto my son Leonard Pluknett" and his heirs each following the other. With this provision that if there be issue to Leonard, and that the farm should descend entire, that if he sells or alienates it, then the four Messuages on the north side to said Rhenish Wine yard to go to son Brook and his heirs or in default to son Hugh and his heirs. To son Hugh the tenement now building "in Shugg Lane" St. James's, for the residue of the term of 1000 years. But until he is 21, his mother to have proceeds for his keep &c. The payment for building has been set apart. To son Robert, the tenement occupied by Mr. Galloway, for his life, provided he does not interfere with his grandmother's settlement, if he does then he is only to have five shillings.

The three tenements in Little Jermyn St. and St. James's St. Westminster settled upon "Capt. Thomas Williams who married my daughter ffrances Pluknett" to descend to their son my grandson, Leonard Williams.

The New East India Stock and Stock in trade to two daughters Isabella and Elizabeth between them. Also to Isabella £300 and to Elizabeth £200 and my survivorship in the Exchequer. To son Brook my original stock in Bank of England and survivorship in Exchequer as also what he may recover of his Master Sympson. Also to him £100.

To son Hugh my two annuities in the Exchequer; if he dies then to son Leonard, and the house in Shugg Lane to son Brook and the £100 between my said two daughters Isabel and Elizabeth.

To son Leonard my thirty nine shares in "Marchaunt's Waterworks" with twenty "Mault tickets" which cost me £11:11:0 each—in all £231, but worth more when they come to be paid. Also to son Leonard £200.

To Grandson Leonard Williams £200 to be put out against he reaches the age of 21, and then to have principal and interest.

To Daughter Frances Williams £50 and to her husband £5.

Other small money legacies and residue to wife as executrix.

Overseers, John Rampaign and Huntley Bigg, and to each of them £10.

"Leond. Plukenett."

Witnesses: Thos. Nye, Huntley Bigg, Thos. Mills, Charles Day.

Proved at London by said wife Letitia, the sole executrix, &c., 16 July, 1706.

The character of Plukenet's writings has been fully dealt with by Dr. Pulteney, 'Sketches,' ii., 18–29; Sir J. E. Smith, in 'Rees's Cyclopædia"; and Messrs. Trimen and Dyer, in their 'Flora of Middlesex,' pp. 374–376; there is therefore but little need for me to retraverse the same ground.

NOTES ON SHROPSHIRE PLANTS.

By William E. Beckwith.

The following paper is a continuation of my "Notes" published in last year's Journal. Besides including species found in the summers of 1881 and 1882, I have given several additional localities for the rarer plants mentioned in my former list, hoping that they may prove useful to those who take an interest in local floras. I am greatly indebted to Mr. Arthur Bennett, of Croydon, for identifying my specimens of *Potamogeton;* and to Messrs. Britten and Ridley, of the British Museum, for similar help with the difficult species of *Carex.*

Clematis Vitalba, L.—Plentiful and apparently wild about the lime-quarries on Lincoln's Hill, Ironbridge, and Llanymynech Hill.

Ranunculus fluitans, Lam.—Abundant in the Severn.

R. Lingua, L.—By Fennymere Pool, Hencote Pool, and pools near Lilleshall.

R. bulbosus, L.—Frequent in hedges on light gravelly soil.

R. parviflorus, L.—Fields near Eaton Mascot.

R. arvensis, L.—Abundant in fields near Shrewsbury, about Minsterley, and on Cound Moor.

Aquilegia vulgaris, L. — Rough bushy bank near Leighton; frequent in Wyre Forest, near Bewdley,*

Aconitum Napellus, L.—Plentiful along the banks of the Ledwyche, near Caynham Camp, Ludlow.

Nuphar pumila, Sm.—Frequent in Kettle Mere, near Ellesmere.

Papaver Rhœas, L.—Corn-fields on gravelly or sandy soil, often very abundant.

P. dubium, L.—Found in the same places as the last, but not so common.

P. Argemone, L.—Corn-fields about Berrington, and Wroxeter.

Chelidonium majus, L.—Frequent, often abundant, in the outskirts of towns and in villages.

Fumaria pallidiflora, Jord.—Hedges and waste places round Shrewsbury and Wellington. I have also found it near Berrington, Condover, Eaton Mascot, Cressage, Charlton Hill, Welshampton, and Hawkstone.

Hesperis matronalis, L.—Apparently naturalised about Lumhole Pool, Coalbrookdale; and near Pitchford Hall. It has grown for many years on the banks of the Severn, near Leighton.

Cardamine hirsuta, L.—Generally distributed. The large form found in woods and wet places very nearly resembles *C. sylvatica*, Link.

C. impatiens, L.—By a small brook flowing from Little Wenlock to the Devil's Dingle.

Cochlearia Armoracia, L.—Banks of the Severn, near Uffington; Atcham, Buildwas, Ironbridge, and Bridgnorth.

Lepidium Smithii. Hook.—Near Welshampton and Colemere.

Viola palustris, L.—Frequent on Shawbury Heath.

V. hirta, L.—Plentiful on the limestone about Much Wenlock.

V. lutea, Huds.—Mr. William Beacall has brought me specimens of this plant from the Stiperstones Hill.

Polygala vulgaris, Koch.—Common on hilly ground. Abundant in the limestone districts.

Dianthus deltoides, L.—Near Downton, Upton Magna.

Saponaria officinalis, L.—By a brook near Buildwas Abbey; plentiful on the banks of the Severn above and below Bridgnorth.

Stellaria aquatica, Scop.—By streams near Cound and Redhill; frequent along the banks of the Severn and Tern.

S. media, With.—The large form of this plant, the variety *umbrosa* of 'English Botany,' is common in low damp woods in Shropshire.

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* Wyre Forest, near Bewdley, is an extensive tract of woodland situated in the counties of Shropshire, Staffordshire, and Worcestershire. In this paper I have, however, only noticed those plants that are found in the Shropshire portion of it.

S. uliginosa, Murr.—Frequent in ditches and wet places.

Arenaria serpyllifolia, L.—Common on rocks throughout the county.

Sagina nodosa, Meyer.—Plentiful by Croesmere Mere.

Spergularia rubra, Fenzl.—Frequent in rocky or sandy places, and on dry heaths.

Hypericum Androsæmum, L.—Plentiful in a wood near Tickwood, Buildwas.

H. Elodes, L.—By Blackmere Mere, near Ellesmere.

Malva rotundifolia.—Frequent about villages; very common round Grinshill Hill.

Radiola Millegrana, Sm.—Open places on Shawbury Heath.

Geranium sanguineum, L.—Plentiful by Dowle Brook, Wyre Forest.

G. sylvaticum, L.—In several places in Wyre Forest.

G. pyrenaicum, L.—Near the pitch-well, Pitchford.

G. dissectum, L.—Frequent on dry sandy banks.

Erodium cicutarium, L'Herit.—Plentiful about Eaton Mascot and Eyton-on-Severn; frequent along the banks of the Severn.

Euonymus europæus, L.—Frequent in hedges about Berrington, Cressage, and Wappenshall.

Rhamnus Frangula, L.—Plentiful in Wyre Forest; it also grows near Croesmere Mere, and on a bog near Welshampton.

Acer campestre, L.—Small trees are not unfrequent; very common as a bush in woods and hedges.

Ulex Gallii, Planch.—On the Stiperstones Hill.

U. nanus, Forster.—Mr. William Beacall has brought me specimens from the Stiperstones Hill, where it is rather plentiful.

Genista tinctoria, L.—Plentiful on the banks of the Severn near Highley; and in fields on Cound Moor, and near Hawkstone.

Coronilla varia, L.—In the autumn of 1882 Mr. R. M. Serjeantson and I found this plant on the banks of the Severn above Bewdley; on sending it to Mr. Arthur Bennett, of Croydon, he informed me that he possessed specimens from the same locality, collected by Dr. Fraser in 1874.

Anthyllis Vulneraria, L.—On Wenlock Edge, near Presthope; near Redhill, Shrewsbury.

Trifolium medium, L.—Very frequent about Much Wenlock, Buildwas, and Little Wenlock.

Lotus major, Scop.—Frequent in ditches and wet places; very common round the base of the Wrekin.

Onobrychis sativa, Lam.—Sparingly scattered, along the sides of the railway, between Much Wenlock and Buildwas.

Lathyrus macrorrhizus, Wimm.—Frequent in woods and hedges; very common about the Wrekin, along Wenlock Edge, and near Ellesmere.

Agrimonia Eupatoria, L.—Frequent on dry sandy and gravelly banks.

Potentilla argentea, L.—On the Sharpstones Hill, near Shrewsbury

P. Comarum, Nestl.—Plentiful by Almond, Hencote, Fennymere, and Marton Pools; and in wet places on Shawbury Heath.

Fragaria vesca, L.—Very abundant on the limestone round Much Wenlock, and near the Wrekin.

Geum rivale, L.—Frequent along the banks of the Roden, near Shawbury; by a small brook near Eaton Constantine.

Pyrus torminalis, Ehrh.—Plentiful in Wyre Forest.

Lythrum Salicaria, L.—Abundant in the old bed of the Severn, near Shrewsbury; and by pools on Shawbury Heath.

Epilobium parviflorum, Schreb.—By ditches and small streams throughout the county,

E. roseum, Schreb.—Ditch below Cound Hall; ditch near Cressage Bridge.

E. tetragonum, L. ?—This square stalked willow-herb occurs near Charlton Hill, Wroxeter, Cound, Uffington, Ellesmere, and Hawkstone.

Myriophyllum spicatum, L.—Abundant in the Severn, and the Ellesmere Meres; common in pools throughout the county.

Hippuris vulgaris, L.—In a small pool near Tickwood, Ironbridge.

Sedum dasyphyllum, L.—Walls and roof of Pitchford Church, a locality mentioned in Leighton's 'Flora'; walls in Ludlow.

Chrysosplenium alternifolium, L.—Found by Mr. R. M. Serjeantson near Evenwood, Cound.

Hydrocotyle vulgaris, L.—Common by the sides of meres and large pools; abundant in boggy ground on the Longmynds; occurs also in small bogs near the Wrekin.

Sanicula europæa, L.—Generally distributed in woods throughout the county.

Cicuta virosa, L.—By Fennymere Pool; in pools near Haughmond Abbey and Upton Magna.

Helosciadium inundatum, Koch.—Abundant in Ellesmere and Hardwicke Meres, and in Hencote Pool.

Ægopodium Podagraria, L.—Often abundant about towns and villages; not uncommon by the sides of streams.

Sium angustifolium, L.—Old bed of the Severn, near Shrewsbury; by Croesmere Mere; and in a pool near Linley, Bridgnorth.

Æthusa Cynapium, L.—A common weed in gardens, but not often found in fields.

Fœniculum vulgare, Gaert.—Quite naturalised, if not truly wild, on lime rocks at Ironbridge and Llanymynech.

Caucalis nodosa, Huds.—Rather frequent about Kenley.

Scandix Pecten-veneris, L.—Not unfrequent in corn-fields about Minsterley; and round the Sharpstones Hill, Shrewsbury.

Sambucus Ebulus, L.—Plentiful on Wenlock Edge, near Presthope Station.

Galium elatum, Thuill.—It is this plant, and not *G. erectum*, (as stated in my former paper), that grows about Shifnal, Evelyth, Coalport, and Bridgnorth. It is abundant along the banks of the Severn, between Linley and Highley, and is plentiful in Wyre Forest.

Valeriana dioica, L.—Frequent in damp open places in woods.

Valerianella olitoria, Mœnch.—Common in corn-fields on stiff soil.

Dipsacus pilosus, L.—Abundant near Hook-a-gate, Shrewsbury; it also grows near Highley, and about Buildwas and Lilleshall Abbeys.

Scabiosa Columbaria, L.—On Wenlock Edge, near Presthope.

Carduus nutans, L.—Common on light sandy or gravelly soil.

C. eriophorus, L.—Left bank of the Severn, above Cressage Bridge.

Arctium majus, Schkuhr.—Open places in woods and in dingles; common, often abundant.

Serratula tinctoria, L.—Found by Mr. H. Auden on Haughmond Hill; plentiful in Wyre Forest.

Chrysanthemum Tanacetum, Syme. — Common by streams; abundant along the banks of the Severn.

(To be continued).

SHORT NOTES.

Rubus discolor, W. & N., *var.* leucocarpus. — A few months ago I learnt from a friend that he had for many years known a bramble which yielded amber-coloured fruit; and at my request he brought me, on Sept. 16th, some branches with ripe berries. The plant is a robust specimen of *R. discolor*, differing from the type in no other respect than in the colour of the fruits. These are of the usual size and number of acini, but when immature their colour is bright pale green, passing to transparent amber when fully ripe. No other tint is present at any stage of their development. The flavour too differs from that of the ordinary blackberry, and my friend thinks that when he was a boy the fruits were larger and more agreeable than those now gathered. They may have been so certainly, but it is more probable that his juvenile palate was more appreciative than that he now possesses at mature age. Most of us have seen amber-fruited raspberries, but this variation seems to be very rare among the Rubi Fruticosi. In the 2nd edition of Ray's 'Synopsis' (1696) a white-fruited bramble is thus mentioned:—"Rubus vulgaris major fructu albo. *The common greater Bramble-bush, with white berries.* Hujus non fructus tantum colore albo a vulgaris fructu differt, sed et cortex et folia hilare viridia sunt, cum illius plerunque fusca seu obscure rubentia observentur. Found accidentally in a hedge not far from *Oxford; D. Bobart.*" In the third edition of the 'Synopsis' (edited by Dillenius) this is constituted a distinct species. Babington (Brit. Rubi, p. 1) mentions that a variety of *R. thyrsoideus* (*R. fruticosus*, W. & N.), named "*leucocarpus*, carpellis albis," is recorded by Seringe in De Candolle's 'Prodromus' (ii. 561.) These are the only records I can find. The plant I have before me grows for several yards in a very old hedge at the foot of the Mendip Hills near Axbridge, Somerset, where my friend remembers it for about twenty-eight years.—Jas. W. White.

[The Rev. R. P. Murray writes that "exactly the same form occurs sparingly in an old quarry in the middle of a field about a mile from Wells, Somerset."—Ed. Journ. Bot.]

Centunculus minimus and Potamogeton plantagineus in Shropshire.—While botanizing with Mr. W. E. Beckwith in the Shropshire part of Wyre Forest I found *Centunculus minimus* growing in the damp parts of the drives, on which probably water has stood in the winter. This is interesting, as no Shropshire localities for this plant are recorded in Mr. Watson's 'Topographical Botany' or in Mr. Leighton's 'Shropshire Flora.' A few weeks ago we found *Potamogeton plantagineus* (also new to this county) in a ditch near Crossmere, Ellesmere.—R. M. Serjeantson.

Ranunculus confusus, *Godr.*, in Ireland. — Among some plants recently sent to me for examination by my friend Mr. R. P. Vowell, of Dublin, who collected them, was an unnamed specimen of one of the Batrachian Ranunculi, which upon careful examination I had no difficulty in referring to the above-named species; and on showing it to Prof. Babington he at once confirmed the accuracy of my opinion. The plant, which was gathered near Howth, Co. Dublin, therefore forms a valuable addition to the Irish Flora generally, and to the flora of district V. of the 'Cybele Hibernica' especially. I may add that I gathered this summer, in company with the same friend, that form of *R. penicillatus*, Hiern, without floating leaves, which is the true *pseudo-fluitans* of Hiern, growing abundantly in the Bonet river at Sligo town, this being an addition to the flora of district IX. of the 'Cybele Hibernica.'—Thos. H. Corry.

Eriophorum gracile in South Hants.—Last June I found *Eriophorum gracile* in three bogs in the New Forest, not far from Lyndhurst; in one it was growing abundantly. Its range extended about two miles.—Bolton King.

Lake Lancashire Plants.—Having, whilst lately visiting Lake Lancashire, studied with much interest Miss Hodgson's papers on the botany of the district (Journ. Bot. 1874), it has been suggested that it might be of interest to note the following plants, not in her list, which I found in the district. They are all common plants and most of them occur in considerable abundance. *Drosera anglica*, Sticklepike, Dunnerdale; *Hypericum montanum* and *H. hirsutum*, Grange, Cartmel; *Peplis Portula; Sedum Rhodiola*, cliffs on "The Old Man;" *Saxifraga hypnoides*, rills on "The Old Man; *Conium maculatum*, Swarthmore Hall; *Leontodon hispidus*; *Crepis paludosa; Hieracium sylvaticum; Senecio sylvaticus; Linaria Cymbalaria*, naturalized on old wall, Broughton; *Isolepis setacea*, near Seathwaite Church &c.; *Bromus asper*, Grange; *Selaginella selaginoides*.—W. F. Miller.

Notices of Books.

Text Book of Botany: Morphological and Physiological. By JULIUS SACHS. Edited, with an Appendix, by SYDNEY H. VINES. M.A., D.Sc., F.L.S. Second Edition. Oxford: at the Clarendon Press. 1882.

ENGLISH botanists who are unable to read the work in the original have been so long anxiously looking for the second edition of the translation of Sachs's great text-book (the first having been for some time out of print), that the announcement of its publication will receive a general welcome. The first English edition was translated from the third German edition; the present one is, as stated in the editor's preface, based on the fourth German edition, that of 1874. The merits and defects of the former English edition are so familiar to all English students of botany that the information most desired by the reader or purchaser will relate to the points in which the present edition differs from the one published seven years ago. Let me say, in the first place, that, from a critical knowledge of the two German editions, I am somewhat disappointed to find that the present edition has not in all cases amended the text where it needed amending. A somewhat hasty comparison detects instances—possibly not numerous, but still sufficiently obvious—where Sachs's own alterations have not been noticed, or where obvious errors or oversights in the translation have been retained.

Seeing however the favour with which the first edition, notwithstanding its blemishes, has been received, it is fair to predict that the present will not thereby suffer in its usefulness. The first thirty-two pages have been entirely revised and re-written by Dr. Vines (a portion having been already printed before it came into his hands), who has added also an appendix of eighteen pages. In this he calls attention to points in which recent discoveries necessitate correction of or addition to statements made in the earlier portion of the text; and both here and in the latter part of the work itself he adds notes of his own. The careful studies made by Dr. Vines in so many departments of botanical morphology and physiology are sufficient guarantee that these notes have been framed with care and judgment, and that they add materially to the value of the work.

The sections in which the most important alterations and additions have been made are thus stated by Prof. Sachs in his Preface to the fourth edition, which does not find a place in the English version:—On Cystoliths; Forms of tissue; Secondary increase in thickness; Alternation of generations; Thallophytes; Vascular Cryptogams; Geotropism; Periodical movements of growing leaves and petals; Movements of mature organs; The Process of sexual reproduction. The number of illustrations is also increased by more than thirty.

The department in which, as might be expected, the new edition presents the greatest difference from the old one, is in that devoted to the structure and classification of Cryptogams. In the section on Thallophytes, the bifurcation into Algæ and Fungi is abandoned in favour of four primary classes,—the Protophyta, Zygosporeæ, Oosporeæ, and Carposporeæ,—dependent on the mode of sexual reproduction, each class being again divided into a chlorophyllaceous and a non-chlorophyllaceous series. Whether this classification represents a closer approach to genetic affinity than the one which has become incorporated into botanical literature, and will stand the criticism of time, is too wide a subject to enter into in the present review. It might well be that the rapid advance in our knowledge of not a few cryptogamic groups since the publication of the German edition of 1874 already requires its modification in some particulars. The text contains, however, an account of the most important recent discoveries and observations up to to that date; and these are supplemented by some editorial notes. The introductory paragraphs to each class contain a very useful sketch of the comparative anatomy of the various organs. Under Vascular Cryptogams, again, the dual division into Isosporeæ and Heterosporeæ is discarded, and three primary classes set up, viz., Equisetineæ; Filicineæ, including Stipulatæ, Filices, and Rhizocarpeæ; and Dichotomeæ, including Lycopodiaceæ and Ligulatæ. The most important addition here is the description of the previously unknown prothallium of *Lycopodium*.

A. W. B.

Development of the Cortex in Chara. By T. F. Allen, M.D. 'Bulletin of the Torrey Botanical Club,' April, 1882.— *Observations on some American forms of Chara coronata.* By the same Author. 'American Naturalist,' May, 1882.

In the first of these papers Dr Allen gives some remarks on the variation of the cortical cells of some species of the diplostephanous group of Charas. The author accounts for the presence of only one row of secondary cells, in the diplostichous section, by the suppression of the cell on one side of each of the cortical nodes. Whatever may be the case with *C. excelsa*, of which we have not seen specimens, with *C. contraria*, and *C. intermedia*, the other species instanced, this is evidently not so, two secondary cells being developed at each node of the primary series.

The main, and by far the most important, part of this paper, however, consists of the description and figures of three new species,* viz., *Chara inconnexa*, Allen (from Iowa, Prof. Bessey), a plant closely allied to *C. dissoluta*, Braun, but differing in its cortical cells being so partially developed as not to meet those of the next node: *C. evoluta*, Allen (Canada, Prof. Macoun), resembling *C. canescens*, but monœcious; some of the specimens however appear to have been diœcious, so it is doubtful whether this represents more than an abnormal form of *C. canescens*, monœcious individuals occurring, though rarely, in other diœcious species, e.g. *C. fragifera*: *C. excelsa*, Allen, a plant belonging to the *contraria* group, apparently nearly allied to the European *C. strigosa*, Braun, from which it differs by its fewer spine-cells and less regular cortication. Descriptions and figures are also given of *C. crinita* (*C. canescens*), *C. aspera*, and var. *Macounii* (var. nov.), and *C. fragilis*.

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* Great inconvenience is caused by the description of new species in papers which, from their titles, appear to relate only to morphology. Anyone finding the quotation, "*C. excelsa*, Allen," would scarcely think of looking for its original description under "Development of the Cortex in *Chara*."

In the second paper nine forms of "*Chara coronata*" are described, with magnified figures of their fructification. Dr. Allen follows Braun's later views in thinking that, as the variation of this and other species of *Chara* is so complex, it is desirable to characterise the forms by a string of adjectives instead of a varietal name. It is difficult to understand why Braun adopted the name of *C. coronata*; it was described as *C. Braunii* by Gmelin in 1826, whereas the name of *C. coronata* was not introduced by Braun until 1834, and in 'Characeen Afrika' Braun quotes it as of "Ziz. ined. circa annum 1814 (sensu latiori)"; certainly there was no doubt as to the species intended by Gmelin. We think that even those who do not care for accuracy in nomenclature might adopt the name of *C. Braunii* in honour of the greatest authority on this order.

Dr. Allen has discontinued the publication of his 'Characeæ Americanæ' and 'Characeæ of America' and purposes from time to time issuing, in their place, descriptions and figures of new American species. We are glad to see that he is continuing the issue of his fasciculi, of which he has now reached the third part.

H. & J. G.

New Books.—A. DeCandolle, 'L'Origine des Plantes Cultivées' (Paris, G. Baillière, 1883; 6*fr.*).—V. Hehn, 'Kulturpflanzen und Hausthiere in hirem übergang aus Asien nach Griechenland und Italien sowie in das übrige Europa' (Berlin, Börntræger, 1883).—W, Zopf, 'Zur Morphologie der Spaltpflanzen' (Leipzig, Veit.).—H. Emery, 'Cours de Botanique' (Paris, Masson, 1883; 6*fr.*).—W. Loebe, 'Die Gräser der Wilse und des Waldes' (erste lieferung: Dresden, Baensch.).

Articles in Journals.—October.

Botanical Gazette (Aug. & Sept.)—G. Vasey, 'New Grasses' (*Muhlenbergia setifolia*, sp. n.).—A. Gray, '*Parishella californica*,' n. gen.—G. E. Davenport, 'Alaska Ferns.'—L. H. Bailey, 'Introduced Plants in Michigan.'

Botanische Zeitung (Sept.). — E. Zacharias, 'On the Cell-nucleus.' — F. V. Höhnel, 'The Mechanism of the growth of the vegetable Cell-membrane.'

Journal of Royal Microscopical Society. — A. Poli, 'Plant-Crystals' (1 plate).

Midland Naturalist. — J. E. Bagnall, 'Botanical Rambles in Warwickshire.'—W. B. Grove, 'Fungi of Birmingham' (contd.).

Œsterr. Bot. Zeitschrift.—W. Voss, ‘*Geoglossum sphagnophilum*, Ehrenb.’—T. F. Hanausek, ‘On Viridescence in *Sinapis arvensis*, form *dasycampa*.’—E. Ráthay, ‘On Bifurcation in the Vine’ (1 tab.).—P. G. Strobl, ‘Flora of Etna.’

Revue Botanique (Sept.).—A. Lucante, ‘Flore du Gers.’—M. Gandoger, ‘Review of genus *Polygonum*’ (contd.).

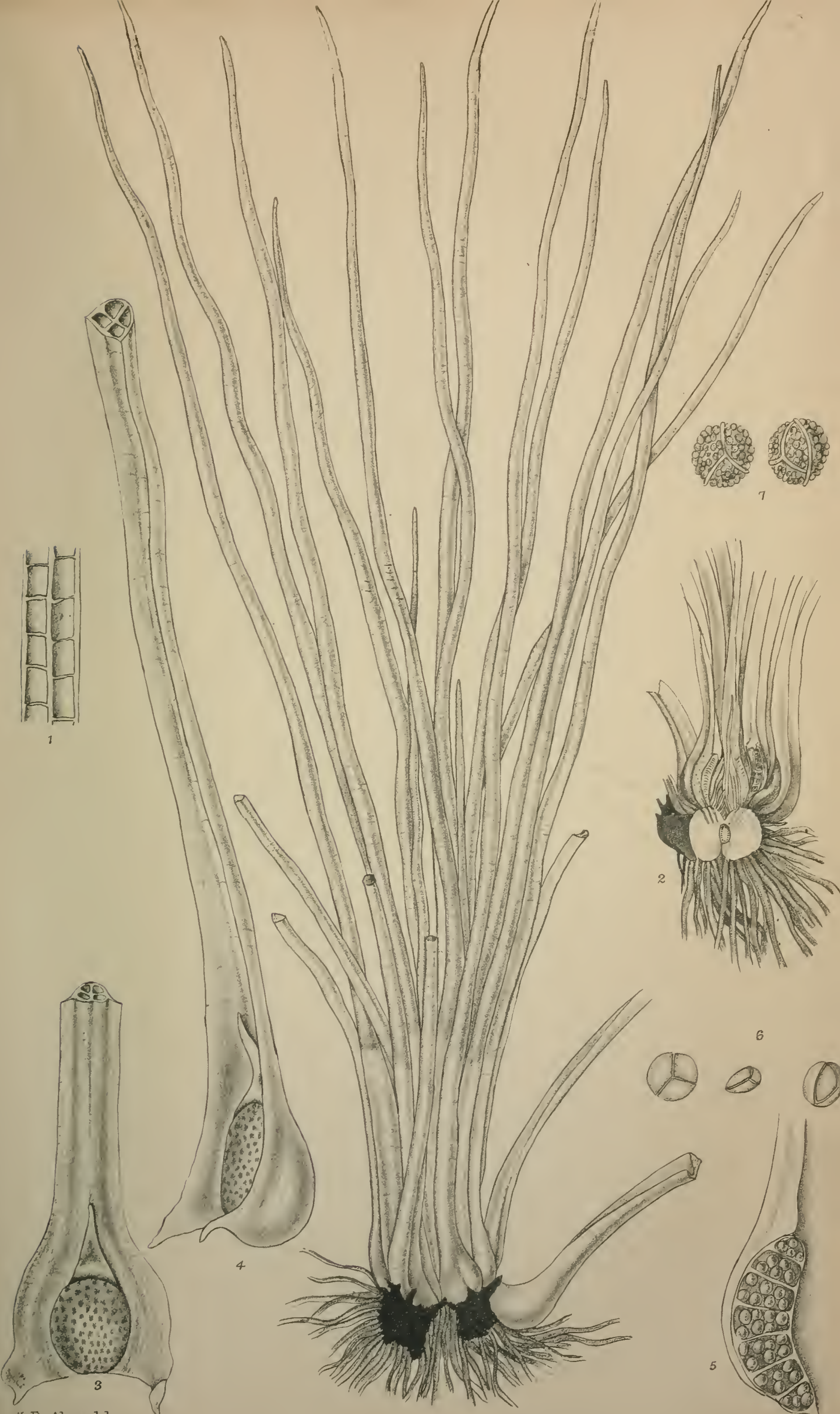
Revue Mycologique.—E. Heckel, ‘Two cases of complex union in Hymenomycetes.’—N. Patonillard, ‘Observations on some Hymenomycetes’ (Phosphorence in *Agaricus acerbus; Cyphella Gilletii*, n. sp.; *Ascobolus marginatus*, n. sp.).—J. Bresadola, ‘Discomycetes Tridentini novi’ (*Helvella Queletii, Verpa fulvocincta, Geoglossum vitellinum, Discina leucoxantha, Mollisia myricariæ*, spp. nn.).—P. Brunand, ‘New and critical Fungi of Saintes’ (*Septoria origani, Diplodia aconiti, D. unedinis, D. euphorbiæ, Phoma affinis*, spp. nn.).—X. Gillot, ‘Observations on Fungi collected in the subterranean galleries of Creusot and Allévard’ (*Polyporus Gillotii*, Roum., n. sp.).

Obituary.

A leading figure among Colonial botanists has lately been removed from us in the person of GEORGE HENRY KENDRICK THWAITES, for many years Superintendent of the Royal Botanic Gardens, Peradeniya, Ceylon. Mr. Thwaites was born at Bristol in 1811, and was in early life engaged as an accountant in that city. He soon turned his attention to entomology and botany, his first botanical note, on the occurrence of *Asplenium lanceolatum* near Bristol, appearing in the ‘Phytologist’ for October, 1841. In 1846 he published, in the ‘Annals and Magazine of Natural History,’ a note “On the occurrence of tetraspores in Algæ,” this being the first of a large number of papers on the structure and life-history of the lower cryptogams, in which Mr. Thwaites showed his capability for careful and original work. Of these papers, those on the process of conjugation in the *Diatomaceæ* are especially important; and in recognition of his work Montagne, in 1845, dedicated to him the genus *Thwaitesia*. It was about this time that he marked for Mr. Watson a ‘London Catalogue,’ indicating the flowering plants seen within ten miles of Bristol, which is quoted for North Somerset and West Gloucester in ‘Topographical Botany.’ On the death of Mr. Gardner, in 1849, Mr. Thwaites was appointed his successor as Superintendent of the Peradeniya Gardens,—a post which he filled until the appointment of Dr. Trimen in 1879. On his arrival in Ceylon he at once devoted himself to an investigation of the flora of the Island. From 1852 to 1856 he contributed descriptions and figures of new Cingalese plants to Hooker's ‘Journal of Botany’; and in 1858 issued the first part of the ‘Enumeratio Plantarum Zeylaniæ,’ which was completed in five parts, the last appearing in 1864. This, which contains descriptions of a large number of new species, was also intended as a catalogue of Mr. Thwaites's distributed collection of Ceylon plants, sets of which, under the initials "C. P.," are found in most large herbaria. These sets vary in extent, and so, of course, in value; a large series is in the DeCandolle Herbarium, and another in that of the British Museum. He made also large collections of Fungi; Messrs. Berkeley and Broome, in their "Enumeration of Ceylon Fungi," published in the 'Journal of the Linnean Society,' mention that "more than twelve hundred numbers" were transmitted to them by Mr. Thwaites. Of his official work in connection with the Peradeniya Gardens it is not necessary to speak in these pages. In 1867 his health began to fail, and he thought of returning home, but a renewal of strength caused him to abandon this project; indeed he never left the island from the time of his arrival there. He died at Kandy on the 11th of September, his funeral being attended by all the members of the staff of the Peradeniya Gardens, and by the principal inhabitants of the town. Mr. Thwaites was elected Fellow of the Linnean Society in 1854; the Imperial L. C. Academy 'Naturæ Curiosorum' conferred the degree of Ph.D. upon him in 1864; he was made C.M.G. in 1878; and was also a Fellow of the Royal Society. Sir J. D. Hooker dedicated the genus *Kendrickia* (Melastomaceæ), to him in 1865. A portrait of Mr. Thwaites is given in the 'Gardeners' Chronicle' for 1874 (part i.), p. 438.

Henry Reeks was born at Standen near Hungerford, Berks, on March 15th, 1838; during the greater part of his life he lived at the Manor House, Thruxton, Andover, where he died on the 20th February, 1882. In 1866 he went to Newfoundland to study its birds, but was so severely frost-bitten, at a great distance from surgical aid, that he had the courage to amputate his own toes, and so to preserve the remainder of his feet. Whilst in this country he compiled a list of its flowering plants, which was read before the Linnean Society (of which he was a Fellow) in 1869: a note from his pen on the more remarkable of these will be found in this Journal for 1871 (p. 16); he also contributed to our pages a note on the occurrence of *Falcaria Rivini* in Hants (Journ. Bot., 1874, p. 279). He also catalogued the flowering plants, ferns and mosses observed in the parish of Eastwoodhay, his results forming a part of the Flora published in the Report of the Newbury District Field Club for 1870-71. The remainder of his works were zoological.

The Rev. Thomas FitzArthur Ravenshaw, late Rector of Pewsey, Wilts, died on Sept. 26th, in London, aged 53. Mr. Ravenshaw was author of 'A new list of the Flowering Plants and Ferns growing wild in the County of Devon,' published in 1860, which was re-issued, with a supplement, in 1872. He also contributed papers—on the botany of Wells, Somerset; Pewsey, Wilts; and Loch Moidart, West Highlands—to the 'Phytologist' for 1857-59. Mr. Ravenshaw's knowledge of British plants was general rather than critical, and many of the records in the 'New List' have been set aside by more recent authors.



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Original Articles.

A CEYLON ISOETES.

By Henry Trimen, M.B., F.L.S.

(Tab. 234).

The solitary Hill of Dambulla, a little north of the centre of Ceylon, is one of the most interesting spots in the island. This huge domed block of smooth gneiss (the summit is said to be 1180 ft. above sea-level) is one of several isolated rocks which at wide intervals rise out of the densely forested plain constituting the north and east of Ceylon. It is accessible only on two sides, and both paths lead to the celebrated rock temple under the summit, one approaching it by several hundred steps cut out of the rock, whilst the other takes one over the lower part of the slippery dome of the hill, the haunt of numerous apes. The temple itself is beneath the projecting eave of a vast mass of rock which forms alike its roof and the summit of the mountain, and consists of several extensive gloomy chambers, lighted only by the doors in the front wall. At the back of this natural cave, roof and floor meet; in front, where has been built up the wall, they gape 70 ft. asunder. Inside, the stagnant air is heavy with incense, and it is not until the eye is accustomed to the peculiar illumination that it perceives the vast number of statues of the Buddha ranged round the temple, and the elaborate decoration of the walls and rocky roof. The latter, painted over the whole of its irregular and undulating surface with small and intricate figure-subjects, has the appearance of immense suspended curtains, and as such indeed is this solid stone roof described by Sir E. Tennent.*

The view from the summit of the hill is very extensive, and from the terrace in front of the temple, where the yellow-robed monks idle away the uneventful hours, very beautiful indeed: a sea of forest mostly, but with distant hills to the south, and away to the north-east the extraordinary natural fortress of Sigiri, an isolated mass towering out of the forest like Dambulla, but flat-topped and cylindrical, in fact shaped like a Stilton cheese.

The flora of Dambulla Hill (more usually called Damboul Rock by the English) is remarkable in combining with the prevalent vegetation of the dry north districts of Ceylon (which closely resembles that of the Coromandel Coast and Madras) some of the peculiarities of the very different flora of the moist regions of the south-west. That beautiful little tree *Mundulea suberosa*, not elsewhere known in Ceylon, is abundant on the bare rocks along with many other shrubs, such as *Protium caudatum*, *Croton Klotzchianum*, *Randia dumetorum*, and abundance of the endemic *Pavetta Gleniei*. A great stiff grass with serrate-edged leaves, *Garnotia stricta*, is very conspicuous. But it is in the crevices of the rocks, after the rains, that a very rich flora of small herbaceous species flourishes, such as *Zornia*, *Stylosanthes*, *Acanthonotus echinatus*, *Bonnaya brachiata*, *Dopatrium nudicaule*, *Cleome monophylla*, *Portulaca suffruticosa* (of Thwaites, 'Enum. Pl. Zeyl.,' not of 'Fl. Brit. India'), *Ludwigia parviflora*, *Habenaria viridiflora*, *Pavonia odorata* with white flowers, several minute species of *Eriocaulon* and *Fimbristylis*, &c. I gathered sparingly in such spots also a very small *Ophioglossum*, ½ to 1½ in. in height, which is, I presume, *O. gramineum*, Willd., originally collected by König at Madras, and now reduced to *O. lusitanicum* in the 'Synopsis Filicum.' The curious little grass *Oropetium Thornæum*, also first found at Madras; an endemic fern, *Cheilanthes Thwaitesii;* and *Selaginella rupestris*, are all common.

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* Ceylon, vol. ii., p. 577.

In this part of Ceylon, as indeed in all parts except the well-known south-western districts and the mountain region,—which being the portions of the island most familiar to Europeans are often quoted as if characteristic of the whole,—there is a long dry season broken by a short period of heavy rain. At the time I paid my visit to Dambulla in December this latter was scarcely over. In the rock hollows the water stands for some time, and it was in some pools of this sort near the base of the hill that the subject of this note was discovered.

This *Isoetes*, though found completely submerged beneath the surface of the water, is probably capable of bearing a more or less terrestrial life at other times of the year. Its leaves are abundantly supplied with stomata.

The following is a brief description of the plant:—

Rhizome strongly 3-lobed, truncate or hollowed out beneath, about ½ inch in diameter, black externally. *Leaves* about 16–36 in number, erect, 6–9 in. long, stiff and firm, bluntly pointed, quite triangular above but with the keel rounded below, flat on upper surface, bordered for about this lower two inches by a perfectly transparent hyaline wing which gradually dilates downwards, attaining fully ¼ in. wide above the sporange, and then rather suddenly dilates to support the sporange measuring ½ in. in width at its insertion. *Ligule* extremely delicate, when perfect about ⅓ length of sporange, triangular, acute, in old leaves usually truncate from decay or frayed from injury. *Macrospores* milk-white, strongly ribbed, when dry chalky and the sides covered with blunt prominences. I could not discover any microspores.

There are two species of *Isoetes* described from Peninsular India, one from Madras, the other from Saharunpore in the north-west Provinces. The first is *I. coromandelina*, Linn. fil., the received *I. capsularis*, Griff. It is difficult to discover valid ground for their separation, but the late A. Braun—who paid great attention to the genus—has distinguished them by their ligules, and named the latter *I. brachyglossa.* He is followed by Baker in his useful Synopsis published in this Journal two years ago. According to this test the Ceylon plant would best fall under the latter; but I am inclined to think there is but a single Indian species, especially as in my fresh specimens I observe considerable difference in the length of the ligule. In dried specimens the characters are very difficult to determine.

The following references to localities may be given:—

Isoetes coromandelina, Linn. f., Suppl. Plant., p. 447 (1781). Roxb. in Calc. Journ. Nat. Hist. 1844, p. 470. Baker in Journ. Bot., 1880, p. 109.

Coromandel, 1774, *Kœnig* in Hb. Mus. Brit.! (= *I. indica* ms.). Circar mountains, appears in rainy season, *Roxburgh.* Near Madras, *Wight*, Hb. propr. Crypt. no. 4! and Hb. Wight, no. 309 (*vide* Baker *l. c.*). Dambulla, Ceylon!

Under which may be included:—

I. brachyglossa, A. Braun in Verh. Brandenb., 1861–2, p. 328; Baker, *l. c.*, p. 109. *I. capsularis*, Griff., Notulæ ii., p. 572 and *Icones* ii., tt. 116–118 (non Roxb.*).

Serhampore, *Griffith* in Hb. Kew! I have seen no other specimens.

Kœnig was the original finder of this species, but his ms. name, "*I. indica*," was never published. His ticket gives the locality "in locis humidis submersis raro;" he adds, "radices incolis esculentæ." In his valuable MSS., preserved in the British Museum, he gives a fuller description and the habitat, "ad margines stagnarum tempore pluvioso submersos satis frequens." Wight says, (ms. note in Herb. Kew), "I have repeatedly found this plant in moist soil near Madras during the cool season;" he does not mention it as being submerged.

DESCRIPTION OF PLATE 234.—*Isoetes coromandelina*, L. f. 1. Cellular structure of the leaf. 2. Section of the rhizome. 3. Inner surface of the base of the leaf, showing the sporange and ligule. 4. Side view of leaf, with sporange and ligule. 5. Section of base of leaf and of a sporange. 6. Fresh macrospores. 7. Dry macrospores.

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* Roxburgh's specimens in the British Museum are obviously *Vallisneria spiralis*, and were long ago so labelled by Dryander; his drawing at Kew also (says Baker *l. c.*) represents that plant. The figure however in Calc. Journ. *l. c.*, t. 26, though poor, is correct; this may have been supplied by Griffith, who edited that posthumous paper.

NOTES ON THE FLORA OF EAST ROSS.

By G. C. Druce, F.L.S.

The following notes were made during a visit to the Black Isle of Cromarty, Dingwall, and in a journey from Strathpeffer to the watershed which Mr. Watson fixes as the boundary for the Vice-county of East Ross (106 in 'Topographical Botany'). The Black Isle of Cromarty is familiar to botanists from its being the habitat of *Pinguicula alpina*, which, thanks to the forethought of the proprietor of Rosehaugh, Mr. Fletcher, still exists at Avoch, with other bog-plants, and, I am told, *Thalictrum alpinum* in the walled-in enclosure of bog, amid cornfields under a high cultivation; and although the reclamation of the bog was extremely expensive—sometimes, according to Dr. Chambers, £40 an acre—the experiment has not been financially a failure, while the climate itself has been much improved with the disappearance of morass and bog which not long since covered so large a portion of that part of the island.

The name Black Isle did not seem appropriate, for as I saw it under a blazing July sun it appeared as bright and cheerful as the Surrey hills,—its clean-looking cornfields, and the plentiful roses and abundance of *Galium verum;* or as one got on the moorland, covered with *Habenaria bifolia* and *Orchis incarnata*, it afforded a pleasant contrast to the dreary moors of Dalwhinnie and the upper portion of Glen Tilt, which I had previously worked.

With the exception of *Ononis arvensis*, *Lamium purpureum*, *Botrychium Lunaria*, and *Equisetum hyemale*, the plants in the following list may be taken as additions to Vice-county 106 (East Ross). Those marked (†) are not indigenous:—

Ranunculus trichophyllus, Chaix.—Ditch by roadside on moorland between Rosehaugh and Ferintosh, Black Isle.

R. truncatus, Dum.—Ferintosh, Cromarty.

Papaver Lecoqii, Lam.—Kessock, Dingwall, Contin.

Cochlearia officinalis, L.—Dingwall side of Cromarty Firth.

Cardamine sylvatica, Link.—Brook near Auchterflow, Black Isle; and near Loch Roslik.

Polygala vulgaris, L.—Garve, Luipmore, &c.; not so common as *depressa*.

P. depressa, Wend.—Rosehaugh, Tor Echiltie, &c.; frequent.

Cerastium semidecandrum, L.—Munlochy.

†*Malva rotundifolia*, L.—Near a house between Kessock and Munlochy.

Trifolium hybridum, L.—Roadside, Kessock.

T. minus, Relh.—Kessock, Contin.

†*Vicia sativa*, L.—Field-border, Rosehaugh.

†*Lupinus perennis*, L. — Shingly bed of River Conan; well established in several parts of Scotland.

Ononis arvensis, Auct.—Cromarty side of Firth; very rare.

Rosa rubiginosa, L.—Kessock; apparently as wild as *canina*.

R. canina, L., *subcristata*.—Ferintosh.

R. mollissima, Willd.—Munloch, Dingwall, &c.; not unfrequent.

R. cærulea, Bak.—Ferintosh.

R. arvatica, Bak.—Contin.

Pyrus Malus, L. — Hedge, Cromarty side of Firth, near Ferintosh.

P. scandica, Syme.—Hedge near Ferintosh.

Rubus affinis, Weihe.—Kessock.

Epilobium angustifolium, L.—Echo Rock, Garve.

E. parviflorum, L.—Near Munlochy.

Callitriche stagnalis, Scop.—Ferintosh.

Myriophyllum alterniflorum, DC.—Deep ditch near Ferintosh.

†*Ægopodium Podagraria*, L.—Rosehaugh.

†*Carum Carvi*, L.—Site of old shieling between Auchterflow and Ferintosh, growing with *Myrrhis odorata*.

†*Sambucus nigra*, L.—Ferintosh.

Valeriana sambucifolia, Mikan.—Common, and the only form seen.

Sonchus asper, Hoffm.—Kessock, Strathpeffer, &c.

Hieracium vulgatum, Fries. — Tor Echiltie, Loch Roshk; common.

†*H. aurantiacum*, L.—Rail-side near Conan.

Carduus tenuiflorus, Curt.—Firth-side, Kessock.

Arctium minus, Schukr.—Kessock.

Artemisia Absinthium, L.—Kessock side of Firth.

Anthemis arvensis, L.—In oatfields, Ferintosh.

Erythræa littoralis, Fr.—Munlochy; abundant in this locality.

Ligustrum vulgare, L.—Munlochy.

Lamium purpureum, L.—Very rare; in garden at Dingwall.

Atriplex Babingtonii, Woods.—Kessock Firth-side.

Rumex aquaticus, L.—Kessock.

Betula verrucosa, Ehr.—Rosehaugh, &c.

B. glutinosa, Fries.—Coul, Strahan, &c.

B. pubescens.—Tor Echiltie, &c.

†*Fagus sylvatica*, L.—Rosehaugh, &c.; planted.

Salix cinerea, L.—Moorland north of Auchterflow.

S. ambigua, Ehrh.—Near Auchterflow.

S. repens, L.—Between Kessock and Munlochy.

Orchis incarnata, L. — Killeen, Munlochy, &c.: this is the plant with hooded and unspotted leaves, till lately referred to *incarnata*.

Habenaria bifolia, Bab. — Moorland between Auchterflow and Kessock, about Contin.

Triglochlin palustre, L.—Near Auchterflow, Luipmore.

Potamogeton polygonifolius, Pour. — Auchterflow, Munlochy; floating specimens in pond near Ferrintosh, Loch Roshk.

Juncus compressus, Jacq.—Moorland near Auchterflow.

Luzula multiflora, Koch.—Killeen, Tor Echiltie, &c.

L. congesta, Sm.—Rosehaugh, Braham, &c.

Blysmus rufus, Link.—Salt-marsh near Munlochy.

Carex flava, L.—Killeen, Contin, Garve, Achnasheen, &c.

Triticum acutum, DC.—Cromarty Firth-side, Dingwall.

Nephrodium Borreri, Newm.—Moorland between Auchterflow and Ferintosh.

N. dilatata, Desv.—Abundant both in Cromarty and East Ross.

N. spinulosum, Desv.—Tor Echiltie.

N. Oreopteris, Desv.—Near Loch Roshk.

Botrychium Lunaria. — Moorland between Auchterflow and Ferintosh.

Equisetum hyemale, L.—Between Kessock and Munlochy.

Nitella opaca, Ag.—Moorland between Ferintosh and Auchterflow.

NEW FORMOSAN PLANTS.

By R. A. Rolfe.

In naming a collection of economic and medicinal plants from the Island of Formosa, sent by Mr. Watters,—many of them, unfortunately, too imperfect for full determination,—my attention has been drawn to some plants which, as far as I can ascertain, are still undescribed. These it is my purpose to describe in the following paper.

Ardisia formosana, sp. n.—Branches glabrate. Leaves elliptical, obtuse, entire, base attenuate, 2½–3½ in. long, 1–1½ in. broad, glabrous, coriaceous, without dots; veins parallel, crowded, running at 60° with midrib; petiole 4 lin. long. Cymes terminal, many-flowered, scarcely equalling leaves. Bracts subulate, ½ lin. long. Pedicels 2 lin. long. Flowers 2 lin. long. Calyx ½ lin. long, segments triangular-ovate, ciliate. Corolla tube very short, segments elliptical, obtuse. Filaments very short; anthers sagittate. Fruit globose, ¼ in. diameter.—Near Tamsui, *Oldham*, No. 301; *Watters*, No. 42. Bonin Islands, *C. Wright*, U.S. North Pacific Expedition, No. 188. The Bonin specimen is in fruit, while those from Formosa are in flower only; but the leaf, habit, and length of cyme appear identical. Closely allied to *A. pedunculosa*, Wall.; it differs in the shorter and broader leaves; more compact, shorter cymes; shorter pedicels and flowers, which in the bud are stouter, and, as well as the petals, less acute. In Formosa the native name is given as *Chiu-ki-tsa* by Mr. Watters, who says, "The sap is used in making bread."

Callicarpa formosana, sp. n.—Branches becoming glabrate with age, but when young, as well as the under side of leaves, the cymes, pedicels, and calyx, covered with a pale brown tomentum of stellate hairs. Leaves elliptical, acute or shortly acuminate, serrulate or denticulate, base rounded; 2–3½ in. long, 1½–2½ in. broad; dark brown, sparingly pubescent above, slightly scabrid with age; veins alternate, in about five pairs; petiole 3–5 lin. long. Cymes 5 times branched, dense flowered, 4–5 times longer than petiole. Pedicels ½ lin. long. Calyx campanulate, scarcely ½ lin. long, segments minute. Corolla 1 lin. long, lobes rounded, shorter than tube. Stamens exserted 1 lin., anthers elliptical, notched at

each end. Style equalling stamens. Stigma capitate. Fruit globose, scarcely 1 lin. diameter.—Tamsui, *Oldham*, Nos. 388, 389; *Watters*, Nos. 23, 82. At the foot of hills on S.W. side of Formosa, *Wilford*, No. 493. Also from *Gregory* and *Swinhoe*. Apparently endemic. The native name given by Mr. Watters is *Ts'u K'ang;* he says, "The buds of the leaves and flowers are pounded and made into poultices for cuts and bruises."

Breynia patens (*Melanthesopsis patens*, Mull. Arg. in DC. Prod. vol. xv. pt. 2, p. 437).—The limits of the three varieties into which Muller divides this plant entirely break down when a good series of specimens are examined. It appears common in Formosa, where it is called *Shan-chi-chin*. The leaves and roots are used to make a wash, said to be effectual in removing blisters, &c., caused by paint and varnish.

Dioscorea Swinhoei, sp. n.—Stem slender, volubile, glabrous. Leaves 3-lobed, cordate based, side lobes rounded, central lobe subulate, acute, 3-nerved, ½–1 in. long, Racemes simple, 4–12-flowered, ½–1 in. long. Male flowers sessile, 1 lin. long; segments broadly oblong, the inner ones somewhat smaller than outer; bracts ovate-lanceolate, minute. Female flowers unknown. —S.W. For-mosa, *Swinhoe*, No. 33.

CLEISOSTOMATIS SPECIEM NOVAM

describit H. F. Hance, Ph.D., &c.

Cleisostoma cerinum.—Foliis carnosis introveniis late linearibus carinatis apice oblique emarginatis sinu haud mucronulatis 5 poll. longis 7 lin. latis, paniculis pedunculo communi folio aæquilongo fultis ramis circ. 4 viridibus angulatis arcuato-recurvis 4 poll. longis e basi fere circ. 30-floris, bracteolis ovato-lanceolatis deciduis, floribus 4½ lin. latis sessilibus, ovario flore paulo longiore, perigonii phyllis cerinis fasciis 2–3 purpurascenti-bruneis percursis linearibus acutiusculis summo subcucullato lateralibus exterioribus subfalcatis quam interiores duplo latioribus, labelli trilobi lobis lateralibus erectis truncatis antice inflexis intermedio tridentato dentibus erectis inter dentes denticulo postice spectante aucto, calcare horizontaliter producto obtuso verticaliter compresso 4 lin. longo fauce processu quadrato glanduloso secus medium crista elevata lineari sulcata levi albida prædito occluso.

In jugo Lo-fau-shan, seu "montibus Tigridum," prov. Cantonensis, vere 1181, leg. rev. E. Faber. (Herb. propr. n. 22065).

Forte juxta *C. sagittatum*, Bl., parum notum, collocandum.

En tertia e plagis Sinarum generis concinni species, ex specimine vivo descripta; duas nempe e silvulis Hongkongensibus jamjam in hocce diario protuli.*

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* 'Journ. Bot.,' xiv., 45; xv., 38.

NOTES ON THE FLORA OF EAST SUSSEX.

By J. H. A. Jenner.

The following notes may be of interest as an addition to Mr. F. C. S. Roper's paper in 'Journal of Botany,' December, 1881, p. 369. I have lately given some attention to the Sussex Roses, and have to thank Mr. J. G. Baker for his kindness in looking over and naming specimens. I have also received much assistance from Mr. Geo. Nicholson, of Kew.

Those species not in Mr. Hemsley's 'Outline' are distinguished by a *. O. = Ouse district. C. = Cuckmere. E.R. = East Rother. M. = Medway.

Clematis Vitalba, L. E.R. district. Occurs at Archer's Wood, near Battle, on a calcareous stratum of the Ashburnham Beds.

Ranunculus Drouetii, Schultz.—Ouse. Marsh ditches, Lewes.

R. trichophyllus, Chaix.—O. Marsh ditches, Lewes.

Barbarea præcox, Br.—O. Naturalised on waste ground, Lewes.

Cardamine amara, L.—O. Common on the marshes at Hamsey and Barcombe, near Lewes.

Diplotaxis tenuifolia, DC.—I cannot find this plant in Sussex. In most, if not all, of the localities given I believe *D. muralis* var. *Babingtonii* has been mistaken for it.

Crambe maritima, L.—Shown me by the Rev. E. N. Bloomfield, on beach east of Hastings. E.R.

Erysimum cheiranthoides, L.; *Sisymbrium Sophia*, L.; *Camelina sativa*, Cr.—I have met with all these species near Lewes, growing near granaries or stables. It is by means of foreign corn (which commonly arrives in this country with a large admixture of seeds) that these and other casuals are spread. The year following the "Military Summer Camp" on the Downs at Lewes all these species occurred on the spot, mixed with *Anthemis tinctoria*, *Alyssum incanum*, &c., the seeds being introduced with the corn on which the horses were fed.

Cerastium arvense, L.—O. Abundant in some arable fields on the Downs near Lewes.

Geranium pyrenaicum, L.—O. On the railway near Lewes; doubtless introduced.

Rhamnus catharticus, L.—O. Sparingly on the Downs, Lewes.

Ulex eu-nanus, Forst.—O. Ringmer, near Lewes. E.R. Common round Battle. M. Crowborough.

Melilotus arvensis, Wallr. — O. Common at Lewes by the river, &c.

M. alba, Lam.—O. Casual at Lewes.

Medicago denticulata, Willd.—O. Seaford and Newhaven. Var. *apiculata*.—O. Bishopstone, near Newhaven.

**Trifolium hybridum*, L.—O. Near Lewes. M. Eridge Park.

Lotus tenuis, Kit.—E.R. Camber, near Rye.

Lathyrus maritimus, Bigel.—E.R. Pett (Rev. E. N. Bloomfield).

Prunus domestica, L.—E.R. Near Battle. O. Hamsey Common, near Lewes; in this locality *spinosa*, *insititia*, and *domestica* may be seen growing side by side.

P. avium, L.—O. In many places near Lewes.

P. Cerasus, L.—O. Iford, near Lewes.

Poterium muricatum, Spach—O. In several places near Lewes; casual.

All the following Roses have been examined by Mr. J. G. Baker:—

**Rosa tomentosa*, Sm., var. *subglobosa*.—O. Near Isfield and Fletching. E.R. Commonly about Battle. C. Woods at Ashburnham.

R. micrantha, Sm.—O. Abundant near Lewes. E.R. Pett, and many places near Battle. C. Abbott's Wood and Eastbourne.

R. canina, L.—Var. *lutetiana*. O. Common at Lewes. E.R. Battle.—Var. *sphærica*.* O. Cooksbridge, Hamsey, Barcombe, &c.—Var. *senticosa*.* O. Hamsey Common, near Lewes. E.R. Battle.—Var. *dumalis*. O. Common about Lewes. At Hamsey a variety occurs with round fruit. "Corresponds with *dumalis* as *sphærica* with *lutetiana*."—Var. *urbica*. O. Many places about Lewes.—E.R. Battle. C. Near Eastbourne.—Var. *obtusifolia*.* O. Cooksbridge, Hamsey, Beddingham, &c. E.R. Battle.—Var. *frondosa*.* C. Near Pevensey and Polegate. E.R. Battle. O. Downs near Lewes.—Var. *arvatica*. E.R. Battle. C. Crowhurst. O. About Lewes, Hamsey Common, &c.—Var. *dumetorum*.* O. Plumpton Road, &c., Lewes.—Var. *tomentella*. O. Barcombe, &c. E.R. Near Dallington.—Var. *andegavensis*.* E.R. Near Petley Wood, Battle.—Var. *verticillacantha*.* E.R. and C. Around Battle, in hedges in one or two places.—Var. *collina*.* C. Between Pevensey and Eastbourne; Crowhurst. O. Ranscombe, near Lewes.—Var. *Kosinciana*.* E.R. Archer's Wood, Battle.—Var. *cæsia*.* E.R. Near Petley Wood, Battle.—Var. *Reuteri*.* O. Near Iford.—Var. *subcristata*.* E.R. Archer's Wood, Battle.

R. stylosa, Desv.—E.R. Archer's Wood, Battle. O. Chailey, near Lewes.

**R. arvensis*, Huds., var. *bibracteata*.—E.R. Frequent about Battle.

Pyrus Aria, Hooker.—O. Plumpton, near Lewes.

P. Malus, L.—Var. *acerba*. O. Barcombe, near Lewes.—Var. *mitis*. O. Many places about Lewes.

Myriophyllum alterniflorum, DC.—O. Marsh ditches near Glynde.

Sanicula europæa, L.—M. Woods about Rotherfield.

Œnanthe Lachenalii, Gmel.—O. Bishopstone, near Newhaven.

Torilis nodosa, Gaert.—O. Banks about Lewes.

**Matricaria inodora*, L., var. *salina*.—O. Plentiful about Newhaven and Bishopstone. (The "*maritima*" of the 'Outline' should be "*salina*.")

Taraxacum officinale, Wigg., var. *erythrospermum*.—O. Common on Downs near Lewes.

Phyteuma spicatum, L.—O. Occurs sparingly in a wood near Ringmer (about four miles from Lewes). This increases the range of this local plant.

Erythræa pulchella, Fr.—E.R. Archer's Wood, Battle.

**Myosotis collina*, Reich., var. *Mittenii.*—O. On an old wall near Lewes.

**Mentha rubra*, Sm.—O. Near Lewes.

Polygonum pseudo-dumetorum.—O. Waste ground, Lewes.

Rumex pulcher, L.—O. Common about Lewes.

**R. obtusifolius*, Auct., var. *sylvestris.*—O. Common by the river at Lewes.

R. palustris, Sm.—O. Lewes marshes, near Southerham; new to East Sussex.

R. pratensis, M. & K.—O. and E.R. This hybrid seems common throughout East Sussex.

**R. crispus*, L., var. *elongatus.*—O. By the River Landport, near Lewes. Several hybrids have occurred near Lewes, one apparently between *pulcher* and *conglomeratus*, and another between *pulcher* and *obtusifolius*.

Daphne Mezereum, L.—O. Wood near Glynde; not near any house or garden; sown or planted ?

**Hippophae rhamnoides*, L.—E.R. The credit of discovering this in Sussex belongs to Mr. B. Helyer, of Ditchling, who sent me a fresh specimen in 1877, gathered at Camber.

A NEW *CYPERUS* FROM THE EAST-AFRICAN ISLANDS.

By R. A. Rolfe.

In a small collection of plants from the islands of the Indian Ocean, sent to Kew by Dr. Coppinger, of H. M. S. Alert, the following undescribed species of Cyperus occurs :—

Cyperus glandulosus, n. sp.—Perennial, tufted. Stems 1½–2 ft. long, triquetrous. Leaves narrow linear, shorter than stem, or longer in vigorous specimens. Umbel simple, 5–8-rayed, bracteated by 3-4 long linear leaves; peduncles 0–2 in. long; spikelets arranged in dense ovoid clusters, ¼ in. long, 4 flowered. Glumes red-brown, ovate, acute, 8-striate, and lightly keeled. Achene trigonous, brown-black, half the length of the glume; style slender, with three long, slender stigmas. *Mariscus glandulosus, Bojer!* Hort. Maur. p. 382 (name only). Galega Island, E. Africa, *Bojer!* Eagle Island, Amirante group; and Providence Island, Mascarene group; *Coppinger.*

It belongs to the section Mariscus; Bojer's type specimen is at Kew, thus enabling me to identify the plant, His name is not a good one, but I have thought it best to retain it.

NOTES ON SHROPSHIRE PLANTS.

By William E. Beckwith.

(Concluded from p. 346.)

Filago germanica, L.—Often abundant on reclaimed heaths and moors, where the soil is light and poor.

F. minima, Fries.—Plentiful about Hawkstone; near Redhill, Shrewsbury; and on Charlton Hill.

Gnaphalium sylvaticum, L.—Base of the Wrekin above Aston, in open woods at Hawkstone, and on Shawbury Heath.

Senecio aquaticus, Huds.—This plant, the *S. erraticus* of Leighton's 'Flora,' is not uncommon by the sides of pools and streams.

Bidens cernua, L.—Pool near Upton Magna; banks of the Severn, near Leighton; and in ditches on the Wealdmoors, near Kinnersley.

Inula Helenium, L.—In fields on Cound Moor, near Mosterley; in a small wood by the brook above Shineton.

I. Conyza, DC.—Frequent about the foot of Tentree Hill, and in Wyre Forest.

Solidago Virga-aurea, L.—Frequent in woods near Coalbrookdale; about Highley; and in Wyre Forest.

Eupatorium cannabinum, L.—Not uncommon by pools and streams; often very abundant in wet places near coal-pits.

Leontodon hispidus, L.—Frequent in hilly pastures; rather common on the limestone about Much Wenlock.

Picris hieracioides, L.—Frequent on sandy or gravelly banks; plentiful about Little Wenlock, Wroxeter, Cressage, Shineton, and in Wyre Forest.

Sonchus arvensis, L.—I have found the tall marsh form of this sowthistle on the Wealdmoors near Wellington, and by Colemere Mere. This is probably the plant recorded as *S. palustris* by Mr. Lees in Leighton's 'Flora.'

Campanula glomerata, L.—Frequent on Wenlock Edge, near Presthope Station.

Vaccinium Vitis-idæa, L.—Mr. Serjeantson has found this plant on the Longmynds near Church Stretton.

Vinca major, L.—Naturalized in hedges about the Bank Farm, near Shrewsbury.

Chlora perfoliata, L.—Plentiful along Wenlock Edge; may also be found about Buildwas, Highley, and near Hawkstone.

Gentiana Amarella, L.—Plentiful about the Hatch limeworks, near the Wrekin; and along Wenlock Edge.

Menyanthes trifoliata, L.—Abundant round Fennymere and Marton pools, near Baschurch.

Atropa Belladonna, L.—About the ruins of Lilleshall Abbey.

Verbascum Thapsus, L.—Frequent on rocks, in gravel-pits, and on sandy banks.

V. Blattaria, L.—By the road from Cressage to Cound Moor.

Linaria Elatine, Mill.—Fields along Wenlock Edge, and on Shawbury Heath.

L. vulgaris, Mill.—Frequent on gravelly and sandy banks, often growing by the sides of streams.

L. minor, Desf.—Rather plentiful on Wenlock Edge, near Presthope.

Veronica Buxbaumii, Ten.—Has become much more common within the last few years, and is now often plentiful in ploughed ground.

V. montana, L.—Frequent in woods about Buildwas, Leighton, Shineton, and Almond Park.

V. scutellata, L.—Rather plentiful by Bomere Pool, and by a pool near Eyton-on-Severn.

Pedicularis palustris, L.—Plentiful by Croesmere Mere, and Bomere and Fennymere pools; frequent along the canal between Ellesmere and Whitchurch.

Mentha rotundifolia, L.—About Presthope, near Much Wenlock.

M. rubra, Sm.—In a small wood by the Severn, near Eaton Constantine.

M. gentilis, L.—On the banks of the Severn, near Cressage.

Origanum vulgare, L.—Abundant by Dowle Brook, in Wyre Forest.

Nepeta Cataria, L.—A few plants grow by the road near Buildwas Bridge, and in the village of Presthope; it also grows on the ruins of Lilleshall Abbey.

Salvia Verbenaca, L.—In several places near the Cross-houses, Berrington.

Scutellaria minor, L.—Boggy ground about Haughmond Hill; plentiful in Wyre Forest.

Marrubium vulgare, L.—Hedge-bank near Eyton-on-Severn.

Stachys annua, L.—Has apparently established itself in a sandy field near Buildwas; I first found it in 1876, and in 1882 there were several plants near the same place.

Galeopsis angustifolia, Ehrh.—Near Redhill, Shrewsbury; Presthope, and Kenley.

G. versicolor, Curt.—Rather frequent about Minsterley.

Lamium amplexicaule, L.—Sandy fields between Cressage and Cound Moor, and near Eyton-on-Severn.

L. Galeobdolon, Crantz.—Frequent in woods round Almond Pool, and about Ellesmere.

Pulmonaria officinalis, L.—This plant still grows in a wood at Lawley's Cross, near Buildwas, a locality given in Leighton's 'Flora.'

Lithospermum officinale, L.—Hedges about Harley and Presthope.

Myosotis cæspitosa, Schultz.—Plentiful in ditches about Ellesmere and Welshampton.

M. palustris, With.—Common by pools and streams.

M. *arvensis*, Hoffm.—The variety *umbrosa* of this species is often plentiful in woods, on light sandy soil.

Symphytum officinale, L.—Plentiful by brooks and pools about Kemberton, Ryton, and Beckbury.

Cynoglossum officinale, L.—About Haughmond Hill, and near Welshampton.

Pinguicula vulgaris, L.—In wet places in fields under Wenlock Edge, near Harley.

Utricularia vulgaris, L.—In ditches near Welshampton, Kinnersley, and Fennymere Pool; in Hencote Pool.

Hottonia palustris, L.—Abundant about Welshampton, and Hardwicke, near Ellesmere; frequent in ditches near Kinnersley; and in the old bed of the Severn, near Shrewsbury; in Hencote Pool, and in pools on Shawbury Heath.

Lysimachia vulgaris, L.—Banks of the Severn, near Linley, and about Fennymere Pool.

Anagallis tenella, L.—Frequent on Shawbury Heath; grows also in a small bog near Leighton.

Centunculus minimus, L.—In the autumn of 1882 Mr. Serjeantson and I found this plant rather frequent in open places in Wyre Forest.

Plantago Coronopus, L.—Hedge-bank near Welshampton; frequent about Hawkstone Park.

Littorella lacustris, L.—Abundant by the side of Ellesmere Mere; sparingly scattered along the edge of Bomere Pool.

Rumex conglomeratus, Murr.—Rather common in ditches, and by pools and streams.

R. maritimus, L.—By the pool in Acton Burnell Park.

R. Hydrolapathum, Huds.—Plentiful by Fennymere, Marton, and Walford pools, near Baschurch; frequent along the banks of the Severn, near Wroxeter, Eaton Constantine, and Leighton; and in the canal near Wappenshall.

Polygonum Bistorta, L.—Fields above Buildwas Mill, and near Lilleshall Abbey.

Empetrum nigrum, L.—Plentiful about the Stiperstones Hill.

Euphorbia amygdaloides, L.—In woods near Cressage, Belswardyne Hall, Hook-a-gate, Coalport, and Highley; plentiful in Wyre Forest.

E. exigua, L.—Fields about Westbury, Berrington, and Cound Moor.

Ceratophyllum demersum, L.—Pool near Pitchford Hall.

Ulmus montana, Sm.—Frequent as a bush in hedges, and large trees are not uncommon.

Sparganium ramosum, Huds.—Very common in ditches and by pools.

S. simplex, Huds.—In ditches near Cound Hall, Kinnersley, and Fennymere Pool.

Acorus Calamus, L.—In several places in the pool at Hawkstone.

Lemna trisulca, L.—Frequent in pools about Shrewsbury; I have also found it in Hardwicke Mere, Hawkstone Pool, and in pools near Lilleshall and Upton Magna.

L. polyrrhiza, L.—Sent me by Mr. T. P. Blunt from the Mere Pool, near Shrewsbury.

Potamogeton natans, L.—Common; often abundant in pools and ditches.

P. plantagineus, Ducros.—Plentiful in a ditch near Croesmere Mere, where Mr. Serjeantson and I discovered it in the summer of 1882.

P. rufescens, Schrad. — In several places in a ditch near Croesmere Mere.

P. prælongus, Wulf. — Abundant in deep places in Whitemere Mere, and may also be found in the canal near Upton Magna. The plant that Mr. Phillips and I found floating in the canal in 1880, near Ellesmere, probably came from Whitemere Mere, as I have never been able to find it growing in the canal in that neighbourhood.

P. perfoliatus, L. — Plentiful in the Severn; occurs also in Ellesmere Mere, but very rarely flowers.

P. crispus, L.—Frequent in Hardwicke and Whitemere Meres; in pools at Hawkstone, Berrington, Cound, and Upton Magna; in the canal between Shrewsbury and Wellington; and in the Severn near Leighton.

P. mucronatus, Schrad. — Rather frequent in the canal near Upton Magna.

P. pusillus, L.—Ditches near Croesmere Mere and Fennymere Pool; in the canal and small pools near Upton Magna. The variety *tenuissimus* grows in ditches near Kinnersley.

P. pectinatus, L.—Abundant in Hawkstone Pool. The variety *scoparius* occurs in the canal near Eyton-on-the-Wealdmoors.

P. flabellatus, Bab.—Rather plentiful in the canal near Upton Magna and Withington.

Zannichellia palustris, L.—In Hawkstone Pool, and the canal near Upton Magna.

Triglochin palustris, L.—Frequent in boggy places throughout the county.

Scheuchzeria palustris, L.—On the mossy margin of Bomere Pool. In the summer of 1881 Mr. La Touche and I could only find a few plants, so I fear it is becoming scarce there.

Hydrocharis Morsus-ranæ, L.—In ditches on the Wealdmoors, near Kinnersley; ditches near Welshampton and by Fennymere Pool.

Orchis ustulata, L.—Rather frequent in some grass-fields under Wenlock Edge, near Harley.

O. mascula, L.—Plentiful in damp shady woods.

O. incarnata, L.—In wet fields by the brook near Kemberton Mill.

O. maculata, L.—Often abundant in wet fields on high ground; frequent in open places in woods.

Gymnadenia conopsea, Br.—In fields near Cressage Park; and under Wenlock Edge, near Harley.

Habenaria viridis, Br.—Fields along Wenlock Edge, between Much Wenlock and Easthope, and under the Edge near Harley.

Ophrys apifera, Huds.—Under Wenlock Edge between Harley and Hughley; and near Tickwood.

Neottia Nidus-avis, Rich.—Mr. Serjeantson has found this plant near Haughmond Abbey, and it has also been found in "The Wood," near Ludlow.

Epipactis palustris, Crantz.—Field under Wenlock Edge near Harley, and by the side of Croesmere Mere.

Epipogum aphyllum, Sw.—I have never seen specimens of this very rare plant, but it has been found on two occasions in Shropshire. In 1876 Miss Lloyd found a specimen in "The Wood," near Ludlow; and in 1878 Miss Peele found it in the same wood. Both specimens were seen by Miss Lewis, of Ludlow, who carefully compared them with the figure and description in 'English Botany.'

Paris quadrifolia, L.—Frequent in the Devil's Dingle, near Buildwas.

Allium vineale, L.—Fields near Eaton Constantine, and Eye Farm, Leighton; on the banks of the Severn above Bridgnorth, and in some adjacent fields; by the road between Much Wenlock and Presthope, and in some adjoining woods, the variety *compactum* being much the more common form.

Colchicum autumnale, L.—Abundant in fields near Tickwood and Highley.

Luzula pilosa, Willd.—Frequent in woods about the Wrekin, Leighton, Buildwas, Coalbrookdale, Coalport, Bridgnorth, Cressage, and Almond Park.

L. sylvatica, Bich.—In woods about Ellesmere, and near Leighton, Buildwas, and Bridgnorth.

L. multiflora, Koch.—Common round Bomere Pool, and on Shomere, Whixall, and Welshampton Mosses.

Juncus obtusiflorus, Ehrh.—Plentiful by Colemere and Croesmere Meres, and by Fennymere Pool.

J. supinus, Mœnch.—Plentiful in ditches about Welshampton, and in the boggy parts of Wyre Forest; it also grows sparingly in bogs about the Wrekin.

J. squarrosus, L.—Abundant on the hills about Church Stretton; plentiful about Hawkstone, and on Shawbury Heath.

Cladium Mariscus, Brown.—Frequent in Croesmere Mere.

Scirpus acicularis, L.—Muddy margins of the Severn, near Leighton.

S. palustris, L.—Common by the sides of pools; abundant in the neighbourhood of Ellesmere.

S. cæspitosus, L.—On Welshampton Moss.

S. fluitans, L.—Found by Mr. Serjeantson on Shawbury Heath.

S. setaceus, L.—Plentiful in Wyre Forest; not uncommon by the sides of pools.

S. lacustris, L.—In Croesmere Mere; Hawkstone, Hencote, and Walford pools; and in pools near Lilleshall.

S. maritimus, L.—In the summer of 1882 I found this plant in several places in Hawkstone Pool.

S. sylvaticus, L.—Boggy places near Shifnal, Eaton Constantine, Leighton, and Hook-a-gate; by pools near Pitchford; and by a brook in Wyre Forest.

Carex pulicaris, L.—Fields near Leighton, Eaton Constantine, and about Cressage Park.

C. disticha, Huds.—Frequent in wet meadows by the Severn, near Leighton; by a pool near Eyton-on-Severn, and by the Tern in Attingham Park. I have also found it in the old bed of the Severn near Shrewsbury, and by pools at Lilleshall.

C. teretiuscula, Good.—Plentiful at the lower end of Colemere Mere.

C. paniculata, L.—By Croesmere Mere; in bogs near Welshampton, under the Wrekin, near Leighton, and Kemberton; in ditches in Attingham Park; and by pools at Shifnal.

C. divulsa, Good.—Frequent about Pitchford Hall; it grows also near Cressage.

C. stellulata, Good.—Boggy ground under the Wrekin, about Hawkstone, Welshampton, Bomere Pool, and Cound Moor.

C. curta, Good.—Plentiful by Bomere Pool.

C. ovalis, Good.—Frequent in wet meadows.

C. stricta, Good.—Abundant by Bomere, Shomere, and Berrington pools; by Blackmere and Whitemere meres; Hencote and Almond pools; and in a bog near Eaton Mascot.

C. acuta, L.—By the Tern, near Attingham, in several places; and it is occasionally found by the Severn.

C. limosa, L.—Grows sparingly along the sides of Bomere Pool, and more plentifully on a boggy part of Welshampton Moss.

C. pilulifera, L.—Fields near Eaton Constantine and Leighton; bogs under the Wrekin, and by Shomere Pool.

C, pallescens, L.—Wet fields near Eaton Constantine, Leighton, Cressage, Belswardine Hall, Cound, and Ellesmere.

C. pendula, Huds.—Plentiful by Lumhole Pool, near Coalbrookdale; by brooks in Wyre Forest.

C. strigosa, Huds.—Mr. Serjeantson found this *Carex* rather abundant near Pitchford Hall in 1881.

C. sylvatica, Huds.—Common in woods.

C. fulva, Good.—By Croesmere Mere.

C. flava, L.—Boggy ground along Wenlock Edge, and in Wyre Forest.

C. filiformis, L.—By Bomere Pool.

C. Pseudo-cyperus, L.—Pools near Hawkstone and Pitchford Hall; by Croesmere Mere and Hencote Pool; in ditches on Shawbury Heath.

C. paludosa, Good.—Wet fields on Cound Moor; about Shifnal, Kemberton, and Hinnington; in the old bed of the Severn near Shrewsbury; and in ditches near Welshampton and Upton Magna.

C. riparia, Curt.—Bogs under the Wrekin; near Leighton, Attingham Hall, Belswardine Hall, Eaton Mascot, Shifnal, and Almond Park.

C. ampullacea, Good.—By Hencote and Bomere pools, and by a pool near Shifnal.

C. vesicaria, L.—In the old bed of the Severn, near Shrewsbury; bogs near Eyton-on-Severn, and Attingham Hall; by Bomere Pool, and on Shawbury Heath.

FERTILIZATION OF *OPHRYS APIFERA.*

By C. B. Clarke, M.A., F.L.S.

Darwin ('British and Foreign Orchids,' p. 63) figures and describes the fertilization of *Ophrys apifera.* He describes the remarkably long, thin, and flexible caudicles of the pollinia, necessarily curved forward at their upper ends. He continues, "The anther-cells naturally open soon after the flower is fully expanded, and the thick ends of the pollinia fall out, the viscid discs still remaining in their pouches"; and (on the next page, 65) "we see that the anther-cells naturally open, and that the masses of pollen, from their weight, slowly fall down." In the accompanying plate (fig. vii.) the very long caudicles are shown curved after the pollinia have fallen out of the anther-cells, and sustaining aloft (though themselves curved) the pollinia. Darwin appears to have been somewhat surprised at these phenomena; he adverts to the slightness of the weight of the pollinia, and the remarkable thinness of the caudicles.

I picked last summer a 3-flowered spike of the Bee Orchis at Box Hill; in the lowest flower the pollinia had fallen on the lip; in the flower above, imperfectly expanded, the anther was curved lower over the rostellum, but the two caudicles were out of the base of the anther-cells and were drawn tightly straight across from the rostellum (where they are firmly permanently attached) to the base of the pollinia; the appearance was as of the arched neck of a horse pulled in tightly by a low hand.

Subsequently, in the Savoy, I met with numerous many-flowered spikes of the Bee Orchis; and in the field I noticed that, in the lowest flower with the pollinia still included in the anther-cells, the caudicles were drawn out of the bases of the anther-cells and quite straight.

Later, some fresh spikes of the Bee Orchis were sent me by Miss Loscombe from Andover, One detached opening flower I laid on its side; on raising carefully the sepal, the anther straightened (as I imagine) imperceptibly; the pollinia were drawn out by the tension of the caudicles. In this position of the flower they could not have fallen out by their own weight. It is, I need not say, quite possible that I may in raising the sepal have disturbed the anther-cell.

Darwin appears to have examined very many flowers of *Ophrys apifera*, in several localities, and during many seasons; he also kept living plants in his room, and observed the process of fertilization day by day. It is therefore very improbable that such an observer would be mistaken, even on the lesser points of the phenomena. But unless the spontaneous opening of the anther-cells to allow the pollinia to fall out by the action of gravity is a very rapid action, I cannot understand how I saw nothing of it. My observations were so scanty that I merely made a mental note of them, with the intention of devoting a little more time to the points in question next season. But I find that it is not likely that I shall have an opportunity of so doing, and I therefore write this note in order to suggest to British botanists that, even after the admirable observations of Darwin, there is still room for further investigation of the Bee Ophrys.

SHORT NOTES.

Ranunculus Drouetii in Ireland.—Prof. Babington referred with certainty to this species some fragments of a Batrachian Ranunculus which I recently submitted to him, and which were sent to me among other innominata by my friend Mr. R. P. Vowell, of Dublin. The fragments were collected by him near Foxrock, Co. Dublin. Prof. Babington's opinion has been, I may add, thoroughly confirmed by the arrival of a more complete suite of specimens, which leave no doubt whatever as to the actual nature of the plant. It is an addition to the Irish Flora generally, and to that of District V., Co. Dublin, of the 'Cybele Hibernica' in particular. My friend Mr. S. A. Stewart, of Belfast, has, like myself, been unable for some years past to find *Ranunculus fluitans*, Lam., in its Antrim—and, so far as at present known, *only* Irish—station, where, owing to the permanent fouling of the river, we fear that it has become extinct.—Thos. H. Corry.

Potamogeton Zizii, M. & K., in England.—Some time ago Mr. Charles Bailey, of Manchester, sent me portions of a specimen of *Potamogeton* from the English Lakes, but it was too poor to admit of certain determination. This year he has kindly forwarded living specimens from Lake Derwentwater, Cumberland, and they prove to be *P. Zizii*, though not in its most typical form; and, later on, good examples from Coniston Lake. We now have this plant from Scotland, Ireland, Wales, and England.—Arthur Bennett.

Hieracium pellitum, Fr.—I send you a note of an error which has crept into Fries's 'Epicrisis Hieraciorum,' and has been constantly copied, appearing in Nyman's recent 'Conspectus' and elsewhere. *Hieracium pellitum* (Fries Epicr. p. 79) is there stated to have been found "ad Gueriaccio supra Limone *Hispaniæ*." For "Hispaniæ" we should read "Italiæ" or "Pedemontii," Limone being a village on the Piedmontese side of the Col di Tenda. The exact spot, "Gueriaccio supra Limone," may be read upon some of the labels of the plants collected by M. Reuter in the Col di Tenda district—for instance, on that of *Asplenium fissum*.—C. C. Lacaita.

Notices of Books.

Conspectus Floræ Europææ. Auctore Carolo Frider Nyman. IV. Monocotyledoneæ. Orebro (Sueciеæ), 1882.

Those botanists who take an interest in the distribution, &c., of the Flora of Europe will welcome the concluding part of Dr. Nyman's admirable 'Conspectus Floræ Europææ.' The three parts published (see 'Journal of Botany,' 1878, p. 347; 1879, p. 348; and 1882, p. 24) contain the whole of the Dicotyledons, with the exception of the genera *Taxus* and *Ephedra;* these begin the present part. The whole of the Monocotyledons are now treated in the same manner as the Dicotyledons, the four parts containing eight hundred and fifty-six pages.

The following remarks have reference principally to our own Flora, and may be taken as rather suggestive than affirmative in many cases:—To *Damasonium stellatum* may be added "Malta" (Herb. Kew); and "Island" (Groenlund's Flora) under *Zostera marina*. *Potamogeton spathulatus* should hardly be kept up as species—at most it is only of subspecific rank, and even that position may be challenged ere long. Under "*P. salicifolius*" "Hibernia" is an error. Dr. Nyman has doubtless followed Babington's 'Manual' (ed. 8); but the Irish plant is *P. Lonchites*, Tuck., and they are very distinct species. "Angl. pr. Bath, sec. Journ. of Bot., 1867," refers to *decipiens*, but this species may be retained as English on faith of Rev. A. Ley's Herefordshire specimens. It may be doubted whether the Swedish specimens of "*salicifolius*" are Wolfgang's plant—certainly some are not. Under *P. lanceolatus*, Sm., "detect. 1804" should be transferred to Cambria. To *P. Zizii* "Angl. bor." may be added (Coniston Lake, &c.). *P. decipiens.*—Surely "Slesvic" may be admitted certainly from Holstein (Nolte!). *P. macrophyllus*, Wolf., and *P. Zizii*, M. & K., are held to be subspecies of *lucens*. *P. longifolius*, Bab., is placed under *decipiens;* it seems certainly not to be *longifolius*, Gay. *P. obtusifolius*, M. & K.—"Gall centr.?" may have the mark of doubt removed; I have seen a specimen from near Paris. *P. Friesii*, Rup., is retained instead of *P. mucronatus*, Schrad., which is given afterwards with a mark of doubt. *P. flabellatus*, Bab., is placed under *pectinatus*, and given for "Hib., Angl., &c." Under *Zannichellia*, *macrostemon*, Gay, is simply a synonym of *palustris;* while *brachystemon*, Gay, is placed under *pedicellata* (Whlnb.), Fr.; usually both are held to be forms or subspecies of *palustris*.

Cephalanthera pallens, Reich. (1818), takes precedence of *C. grandiflora*, Bab., which stands as *C. grandiflora*, S. F. Gray (1821). The genus *Epipactis* is split up not quite in the usual way. *E. violacea*, Bor., is simply a synonym of *E. latifolia;* this seems misplaced; its growth is very different from that of *latifolia*, and the plant would seem to come better under *atrorubens*, as understood by Dr. Nyman. *E. ovalis*, Bab., is made a subspecies of *latifolia;* and *E. media*, Fr., mant. p.p., is given as a synonym. *E. microphylla*, Sw., is held not a Danish species; the Swedish "*microphylla*" seems to be referred to *atrorubens.* Is the Oeland plant the same as Babington's? These plants are hardly finally settled, and it will perhaps be hereafter found that Babington's plant is different from either, but until British specimens have been carefully compared with Fries's herbarium much cannot be said. The Irish *Spiranthes* is named "*S. gemmipara*, Lindl., *S. cernua* (Rich.?), Bab." While one would wish to retain Lindley's name, it seems certain that the American *S. Romanzoviana*, Cham., is identical with the Irish plant; at least after comparing good specimens of both I can see no appreciable difference, and such is the opinion of better botanists (Dr. Gray, &c.). *Orchis purpurea*, Huds. (1762), is retained; *O. fusca*, Jacq. (1776), is given as a synonym. *O. militaris*, L. suec. (Jacq.), is our *militaris; O. Simia*, Lam. p.p., is given as a synonym. *O. tephrosanthos*, Vill., is used instead of *O. Simia*, Lam., which is "p.p." only. For Britain we have recorded "*O. latifolia*, L. suec."; "*O. incarnata*, L., Fr."; and "*O. angustifolia*, Reich. ic." Our two Habenarias become "*Platanthera chlorantha*, Cust.," and "*P. solstitialis* (Bngh.), Reich. ap Mössl. et ic. 13, 120." The Irish *Neotinia intacta* becomes *Tinæa cylindrica*, Biv. Miss More should be substituted for "Dr. More," and "shore of Lough Corrib" added to "Galway." Under *Aceras anthropophora*, should not "mer. med" be added after "Angl.," the Welsh station being an error.

Crocus nudiflorus is accepted as British; Mr. Maw, however, considers it an introduction to England. *Narcissus biflorus*, Curt., is "Angl. mer," but *N. poeticus* is "Angl. (dubia civis)." *Lilium pyrenaicum* is noted for "Angl. mer (Devon) inquil. r." Our *Ornithogalum nutans* is a *Myogalum.* To *Scilla autumnalis* "Crimea" may be added, on faith of a specimen taken to Kew. Our *Muscari racemosum* is *Botryanthus odorus*, Kunth; "Suffolk. Norfolk?" might have been added, the species being rare in the wild state. *Allium Babingtonii* does not seem to be noticed. To *Allium triquetrum* "Ang. mer occ." may be added. Under *A. carinatum, L.*, "Ang. (Lincolnsh. r)" is given, and "Scot. r" as native. It is a dubious native anywhere in Britain. *A. sibiricum*, L., is not recognised as British, our plant being placed under *A. Schœnoprasum*, L., and "Scot. Angl." given. Perhaps "Scot.? Angl. bor. mer-occ" would be better. Judging by the distribution of *sibiricum*, our Cornish plant would seem more likely to be *Schœnoprasum. Tofieldia borealis*, Whlnb., is the name adopted for our *T. palustris*, Huds., Hudson's name being said to be ambiguous; why so? *Juncus diffusus* is considered to be probably a hybrid between *J. effusus* and *J. glaucus.* May not *J. arcticus*, W., have "Island" added (Groenlund's Flora)? *J. nigritellus*, D. Don., is made a subspecies of *lamprocarpus. J. Kochii*, F. Sz., is ranked as a subspecies under *J. supinus*, and "Angl. Hiber." given. *Luzula sylvatica*, Gaud. (1811), becomes *L. maxima*, DC. (1805), Hudson having placed it under *Juncus*

(1762). *Luzula erecta*, Desv. bot. i. 165 (1808), is adopted in place of *L. multiflora*, Ley (1811). *Eriophorum latifolium*, Hop., is given for "Brit."; what is our plant? Under *Eriophorum alpinum*, L., "Forfar extinc." might be added. The Linnean *Scirpus* is divided into five genera. *Scirpus Tabernæmontani* is a subspecies of *lacustris; S. carinatus*, Sm., a full species.

Carex Grahami, Boott., is made a subspecies of *C. saxatilis*, L., and confined to Scotland. The eastern limit of *C. punctata*, Gaud., in England may be extended to coast of Suffolk (Rev. W. M. Hinds). *C. Hornschuchiana*, Hpe., is British; while *C. fulva*, Good., is kept up, and "Brit.?" given under it. Mr. Pryor seems to have cleared up these plants, and the name would be better dropped. *C. xanthocarpa*, Deg., is held as a hybrid—"*flavo-hornschuchiana*, Sz." *C. lepidocarpa*, Tausch., is made a subspecies of *flava*, but no geographical distribution is given; it may be rare. *C. ustulata*, Whlnb., is given for Scot. "Ben Lawers." Under *C. atrata*, L., "Island" may be added, also to *C. salina*, Whlnb., which is Icelandic, as well as *C. crypocarpa*, C. A. Mey., and *C. hyperborea*, Drej. "Island" may also be given additional for *C. turfosa*, Fr. *C. aquatilis*, Whlnb., in addition to *C. anguittata*, Drej., for "Island." *C. leporina*, L., is adopted for *C. ovalis*, Good. To *C. festiva*, Dewey, "Island" may be added (Groenlund's Flora), *C. echinata*, Murray (1770), replaces *C. stellulata*, Good. (1794). *C. axillaris*, Good., is a full species, with *C. muricata* × *remota*, Ritschl., as a synonym. Is this species really an hybrid? I am inclined to doubt it, and time may show that *muricata* × *remota* would not produce it. *C. Bœnninghauseniana*, Whe., is a sub-sp. of *axillaris*. *C. canescens*, L., is used for *C. curta*, Good. *C. Persoonii*, Sieb., is "Angl. Scot.," but *C. vitilis*, Fr., is held a sub.-sp. of *Persoonii* and is not British. Certainly the Prussian specimens of *C. vitilis* seem different from our Scotch plant. Under *C. paradoxa*, W. "York, &c." should be shifted from "Hiber." to after "Angl."; Norfolk (certain) and Middlesex might have been added. The number of species of *Carex* for all Europe is 163; of these 16 are confined to one country each. There are 40 sub-sp., and of these 14 are found in one country each.

Setaria viridis is given for "Angl. mer." as a native. This certainly has more claim than *Echinochloa crus-galli*, P.B., which is given as a native for "Angl. (r)." *Digitaria filiformis*, Koel., takes the place of *D. humifusa*. *Spartina alterniflora* is marked "introd.?" and *S. Townsendi*, H. & J. Groves, is a full species. *Anthoxanthum Puelii*, Lec. Lmt., is "Angl. occ. mer." as a native, but it is a doubtful one: Mr. Watson, not many months before his death, wrote, "I am assured *A. Puelii* is not a native of Surrey anyhow." Our *Phleum alpinum* is held to be *P. commutatum*, Gaud., a name which will be found in our old Floras. *P. Boehmeri* becomes *P. phalaroides*, Koel. gram. (1802). Our *Alopecurus alpinus*, Sm., is a rare plant, its only countries being "Scot., Spitzb., Ross arct." *Alopecurus fulvus* is made a sub-sp. of *geniculatus*. *Chamagrostis minima* is *Mibora minima*, B.B.; it is to be hoped that this name will be retained and used. *Psamma litoralis*, P.B., is adopted for *Ammophila arundinacea*. Under *P. baltica* "Angl. mer." should have "bor." added. *Calamagrostis stricta* becomes *C. neglecta*, fl. wett. (1799). *Gastridium australe*, P.B. (1812), is used instead of *G. lendigerum*, Gand. (1828). *Polypogon monspeliensis*, Dsf., has "Scot. (r)," but is surely only an alien in Scotland? *Aira setacea*, Huds., is used instead of *A. uliginosa*, Whe., and kept as a distinct species from *A. flexuosa*, L. After "Angl." under *Corynephorus canescens*, "Norfolk, Suffolk," might well be added for so local a species; its record from Kent is almost certainly an error. *Danthonia decumbens*, DC. = *Triodia decumbens*. *Vulpia* is separated as a genus from *Festuca* (as is done by Hackel with *Bromus* and *Michelaria* between them.) We have *V. membranacea*, Lk. (1821) in place of *V. uniglumis*, Rchb. (1830), (*Festuca uniglumis*, Sol.). Our *Festuca ambigua*, Le Gall, is made a subspecies of *Vulpia Myuros*, Gm., and is restricted to England and France; surely it rather belongs to *V. ciliata?* *Bromus asper*, Murray, is "Angl.?" why? *B. serotinus*, (Sol. ms.), Benek. is given as a subspecies of *asper* and "*B. hirsutus*, Curt.?" a possible synonym. *B. hordeaceus*, L. (Whlnb.), is made a subspecies of *mollis*, and *B. Ferronii*, Mabille (*B. mollis* v. *Lloydianus*), is placed under it and only occurs in "Gall. occ. Angl." *Festuca loliacea*, Huds. (R.) is considered "hyb. (*F. pratensi-perennis*, F. Sc.) inter *F. elatiori* and *Lolio perenni*." *F. dumetorum*, L. (*F. oraria*, Dum.), is given for "Angl., Scot., lit. mar." A number of names are grouped under the difficult species *F. rubra*, L. It is given for "Brit." and a subspecies, "*F. fallax*, Th., 1799, *F. dumetorum* and var. Fr. hb. nor. V. 97" is also "Angl." *F. glauca*, Lam., is a full species apart from *ovina* and is "Brit.," as also is *F. cæsia*, Sm., here made a subspecies. What is Smith's plant? *F. duriuscula*, L. sp. (non Systema), is not given as British. *Glyceria pedicellata*, Towns., is placed under *fluitans*. *G. loliacea*, Fr. (or of Watson?) is given for "Angl.," only; "Scot., Hibern." might be added. This is placed as a subspecies of *fluitans*, and a hybrid between *G. fluitans* and *Lolium perenne*. Surely this is a slip; have our botanists ever thought of such a combination? *G. Borreri*, Bab. in Eng. bot. sup. (1837), is found in "Hib. Angl. Gall. Bat. and Germ. *G. conferta*, Fr., is made a subspecies of this and is only for "Suec. ... (rr)." If *conferta* is really distinct from *Borreri*, what is the Iceland plant? *Poa Parnelli*, Bab., is made a subspecies of *P. nemoralis* and "Angl." only given for it, and "? *P. montana*, Par. (Scot.)" added after. *P. laxa*, Hke., and *P. minor*, Gaud, are the names given to the two Loch-na-gar species. *P. cæsia*, Sm. brit., is adopted, and *P. glauca*, Sm., eng. fl. as a synonym, with the observation that *P. cæsia*, Sm., E. B., 1719, is a doubtful plant. *P. Balfourii*, Parn., is made a subspecies of Nyman's *cæsia*, and found in "Angl. Scot." only. "*P. montana*, Parn., sec. Bab." is placed here. *Elymus geniculatus*, Curt., is given for "Angl. rr." Was it ever really found wild at or near Gravesend? *Hordeum pratense*, Huds. (1778), becomes *H. secalinum*, Schreb. (1771). Our seaside Tritici are represented by *T. acutum*, *T. pungens*, and *T. junceum*, but *T. littorale*, Hort., *T. pycanthum*, Godr. is not British? cf. Syme in E. B. and Warren in Journ. Bot.) *Lolium linicola*, Sond. (1844), is given for "Angl." under the name of *L. remotum*, Schrk. baier fl. i. 382 (1789). It is not a native of Britain. *Festuca loliacea*, Curt. (non Huds.) (?) is given as a hybrid between *Lolium perenne* and *Festuca elatior*, and as a subspecies of *Lolium perenne*.

The systematic arrangement is followed by a table of the species and subspecies in the various orders, the largest number of species in one order being 1336, and 340 subspecies (under Compositæ). The whole number of Dicotyledons is 7770 species, and 1743 subspecies. Of Monocotyledons 1625 species and 271 subspecies, with a total for the whole of Europe of 9395 species and 2014 subspecies. An index of the orders, genera and subgenera, only is given, but a complete index is promised as a supplement, with additions, corrections, an account of the vascular cryptogams, and an enumeration of Characææ. Dr. Nyman is to be congratulated on the successful termination of his work, which must have been one that called for no ordinary patience and perseverance, when it is considered the enormous number of publications, &c., that must have been consulted. It becomes, now, almost the duty of those botanists in Europe, who take a special interest in its Flora, to severally examine their herbaria and notes, and send Dr. Nyman any additions, corrections, &c., that may occur to them. Many interesting inquiries might be started on the peculiarities of some species, especially the lines of distribution they take from east to west, and *vice versâ*. A. B.

Tabulæ Rhodologicæ Europæo-Orientales locupletissimæ. Auctore M. Gandoger. Paris, 1881.

This is a volume of 317 pages, treating, by means of dichotomous analyses, of 4266 "species" of roses arranged under the following twelve genera:— *Ripartia* (= *Synstyleæ*), *Eurosa* (= *Gallicanæ*), *Scheutzia* (= *Cinnamomeæ*), *Laggeria* (= *Eglanteriæ*), *Cottetia* (= *Pimpinellifoliæ*), *Bakeria* (=*Sabinæ*), *Ozanonia* (= *Alpinæ* and *Montanæ*), *Crepinia* (= *Canineæ*), *Chavinia* (= *Glandulosæ*), *Chabertia* (=*Rubiginoseæ*), *Pugetia* (=*Villosæ*), all of Gandoger, and *Hulthemia*, Dumort. The author terms these subgenera, but as he uses the same specific names in several of them, and places their initial letters before each species, he evidently intends them for genera. The name *Bakeria* had been already applied to another genus, but probably this is of little consequence, as it is hardly likely that anyone, besides the author, will ever make use of his names. About 70 per cent. of the "species" are here described for the first time, and of the remainder a large proportion have been described in the author's previous works. The characters given in the tables are of the most trivial nature, and in the absence of full descriptions are of course quite inadequate to distinguish critical plants. Any fair-sized English rose-bush would, we think, furnish at least half a dozen of M. Gandoger's species. It is somewhat amusing to read the remarks relative to the fixity, &c., of species; he writes:—"Voilà les deux écoles qui sont en présence: école synthétique d'une part, école analytique de l'autre. Avec la première, on arrive logiquement au darwinisme ou transformisme, système qui révolte autant par ses conséquences que par son absurdité. Avec la seconde, c'est la science scrutée, étudiée, approfondie, livrant ses secrets, étonnant et charmant tout à la fois, par ses résultats, l'observateur judicieux." A few lines further on, referring to M. Crépin's protest against the unlimited description of new forms, he writes:—"Il est possible que pour lui ces nouvelles espèces ne soient que des variations d'un même type. Mais pour nous, elles sont des êtres parfaitement distinctes et parfaitement autonomes." The sneering accusations against this greatest rose botanist, which follow, might readily be refuted, but, like the rest of the work, they are of so childish a character as to be unworthy of serious consideration.

With such works as M. Gandoger's in existence it is evident that some line must be drawn by monographers as to the quotation of synonyms. To burden an account of the roses with the quotation of these 4265 new names would be not only useless, but would encourage this most objectionable practice of describing every trivial form as a new species.

We trust Mr. Jackson will see his way, in the new "Nomenclator," to relegate the whole of the names published by this author to the category containing gardeners' monstrosities and such-like.
H. & J. G.

The 'Transactions of the Plymouth Institution and Devon and Cornwall Natural History Society' for 1881–82 contains an interesting lecture by our valued correspondent, Mr. T. R. A. Briggs, entitled 'Queries in Local Topographical Botany.' The modest title hardly gives a fair idea of the contents of the paper. It is unnecessary to say that Mr. Briggs stands in the first rank of local observers, and this gives peculiar force to his conclusions, as well as to the remarks with which he prefaces them. "If students of Nature," he says, "would try to trace out the influences which have been at work in their several neighbourhoods in past ages by noticing those at present active around them, each might in his little sphere of labour, and in proportion to his treasure of industry and ability, help on the great scientists of the day in bringing forward theories capable of demonstration, because founded and built up on the sure ground of honest and clearly ascertained facts. In preference, however, to undertaking investigations of the kind indicated, many employ their time in writing of evolutionary stages through which, according to their imaginings, species, such as we see them, *must* have passed to attain their present forms and characteristics." Mr. Briggs takes certain characteristic plants of the neighbourhood of Plymouth, traces their local distribution, and suggests the various causes which seem to have operated in different cases—such as hybridity, insect agency, climatal influence, lithological conditions, species warfare, and even less generally recognised means—he suggests, for instance, *Epilobium lanceolatum* [in the neighbourhood of Plymouth] has "had its more general diffusism accelerated by the light beard-appendaged seeds having been carried on before passing engines to previously unoccupied spots." The author concludes his paper (which we regret that space will not permit us to reproduce) by saying, "Whilst I am willing to accept certain views of natural phenomena adopted by advocates of the evolution theory, I yet consider that 'not proven' must be written against the doctrine of the 'Origin of Species by means of Natural Selection.'"

Prof. P. M. Duncan has, under the title of 'Heroes of Science,' compiled for the Society for Promoting Christian Knowledge a series of short sketches of "botanists, zoologists, and geologists." The botanists selected are Ray, Tournefort, Linnæus, and DeCandolle; and these notices are preceded by an interesting sketch entitled, "the infancy of the knowledge of plants," in which are embodied notices of 'Aristoteles,' Theophrastus, 'Plinius,' and Dioscorides. Prof. Duncan is careful to disclaim any originality for his work, and to acknowledge the sources from which most of it is derived; but he has produced a very readable volume, the sketch of John Ray being especially well done. It is interesting to note that this pious naturalist regarded the contemplation of the works of God as "part of the business of a Sabbath-day." Many naturalists besides the ones to whom the book is especially devoted are incidentally noticed; and it is to be regretted that the volume was not completed by the addition of an index.

Under the title 'Charles Darwin' Messrs. Macmillan have reprinted in their "Nature Series" the memorial notices of Mr. Darwin which appeared in 'Nature,' with the very beautiful likeness of him which was also published in that periodical. The account of his "Work in Botany" is by Mr. Dyer. In another part of the volume Mr. Romanes draws attention to the influence exercised by Prof. Henslow upon Darwin while at Cambridge; and Prof. Huxley contributes a characteristic preface, in which the doctrine of evolution is spoken of as "irrefragably established in science, inseparably incorporated with the common thoughts of men, and only hated and feared by those who would revile but dare not"! Oddly enough, the date of Mr. Darwin's death does not appear anywhere in the volume.

We have received four parts (4–7) of 'The Botanical Atlas,' by Mr. D. M'Alpine, of Edinburgh, whose 'Biological Atlas' has already been noticed in these pages.* It is to be completed in thirteen monthly parts, each part containing "four beautifully-coloured plates,"—a description which we are glad to endorse as accurate,—and is intended to serve as a guide to the practical study of plants. When finished, the work will contain twenty-six folio plates devoted to Phanerogams and a similar number of Cryptogams, with accompanying letterpress. Judging from those before us, we can confidently state that it will form a valuable addition to our small stock of similar works.

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* 'Journ. Bot.,' 1880, p. 122.

We are glad to welcome another (the sixth) part of Dr. Braithwaite's valuable 'British Moss-Flora.' In this instalment the *Dicranaceæ* are continued, the species of *Seligeria*, *Brachydontium*, *Blindia*, *Didymodon*, *Campylopus*, *Dicranoweissia*, and seven of the twenty-one *Dicrani* being described and figured with, it is needless to say, the greatest care.

M. E. Bescherelle has published (Algiers, Jourdan, 1882) a 'Catalogue des Mousses observées en Algérie' by various collectors. It contains descriptions of the following new species:—*Weisia pallens*, Sch. MSS.; *Grimmia aurasia*, Besch.; *G. Cossoni*, Besch.; *Orthotrichum Letourneuxii*, Besch.; *Funaria Duriaei*, Sch. MSS.; *Bryum Duriaei*, Sch. MSS.; *Pseudoleskia Perraldieri*, Besch.; *Homalothecium Algerianum*. Besch.; *Rhynchostegium Letourneuxii*, Besch.

We have received 'A List of the Flowering Plants of Dumfriesshire and Kirkcudbrightshire, compiled for the Dumfriesshire and Galloway Natural History and Antiquarian Society by James M'Andrew. 1882: "Herald" Office, Dumfries.' This is partly a compilation from already published records, and partly the result of individual labour by the compiler and other observers; and forms a very useful foundation for a future more complete Flora of the district. Many of the species are treated in a very broad sense—*e.g.*, we have *Rosa canina*, *Fumaria capreolata*, *Viola canina*, and the like; and there are some plants inserted with a sign of doubt which would have been better omitted—such as *Nuphar pumilum*, *Holosteum umbellatum*, *Callitriche autumnalis*, *Juncus balticus*, and *J. castaneus*. *Cuscuta europæa* "on flax about Dumfries" was probably *C. Epilinum;* and "*Primula elatior*, Jacq.," is certainly not likely to be the true plant of our eastern counties. A short list of the rarer plants of Wigtownshire concludes this useful pamphlet of fifty-two pages.

New Books. — A. Minks, 'Symbolæ Licheno-Mycologicæ,' part ii. (Kassel, Fischer, 1882).—P. Sydow, 'Die bisher bekannten Europaïschen Characeen' (Berlin, 1882).—V. A. Poulsen (transl. by J. P. Lachmann), 'Microchimie Végétale' (Paris, Doin, 1882). —A. B. Frank, 'Grundzüge der Pflanzenphysiologie' (Hanover, Hahn, 1882). — R. Heinrich, 'Grundlagen zur Beurteilung der Ackerkrume' (Wismar, Hinstorff, 1882).—Julian Deby & F. Kitton, 'Bibliography of Diatomaceæ' (London, Bogue, 1882). — P. A. Saccardo, 'Fungi Italici,' fasc. xxix.–xxxii. (with Index). — B. Lorentz & A. Parade, 'Cours Elémentaire de Culture des Bois,' ed. vi. (Paris, Doin, 1883).—Grant Allen, 'The Colours of Flowers' (London, Macmillan).

ARTICLES IN JOURNALS.

American Journal of Science.—Asa Gray, 'Remarks concerning the Flora of North America.'

Annales des Sciences Naturelles (Botanique, 6 ser., xiv., p. 2 (Sept.)—E. de Janczewfiski, 'Comparative studies on sieve-tubes' (6 plates).

Botanische Zeitung (Sept.).—T. W. Engelmann, 'On Assimilation in *Hæmatococcus*.' (Oct.).—L. Kraetzschmar, 'On Reagents for testing Life.' — B. Eyferth, 'Development of *Selenosporium aquæductum*.' — E. Giltay, 'On a peculiar form of stereum in certain Ferns.'—F. Ekfving, 'On Conduction of Water in Wood.' (Nov.) — E. Bergmann, 'Investigations on the occurrence of Formic Acid and Acetic Acid in Plants, and on its physiological significance in Metabolism.' — K. Goebel, 'On the morphology of Sporangia.'

Botaniska Notiser. — E. V. Ekstrand, 'On the Scandinavian Moss-Flora.'—E. Ljungström, '*Epilobium parvifolium* × *roseum*.' —T. O. B. N. Krok, 'Swedish Botanical Literature,' 1881.

Bull. Soc. Bot. France (xxix., part 1). — A. Franchet, 'The Plants of Father D'Incarville in the Paris Museum.'—J. Mangin, 'On the development of Spiral Cells.' — J. E. Planchon, 'The Chesnut-disease in the Cevennes'; and 'Monstrous forms of *Agaricus ostreatus* (*A. convivarum*, Del., and *Clavaria polymorpha*, Touchy). — P. Van Tieghem & G. Bonnier, 'On the latent life of seeds.' — J. D'Arbaumont, 'On the evolution of bundles in the stems, leaves, and buds of *Ampelideæ*.' — G. Rouy, 'Botanical Excursions in Spain' (*Diplotaxis brassicoides*, *Silene saxicola* (*S. colorata*, Poir., var. *angustifolia*, Willk.), *Dianthus sætabensis*, *Arenaria pseudarmeriastrum*, spp. nn.).—A. Chabert, 'Plants to be excluded from the Flora of Savoy.'—Notices of Prof. Decaisne.

Bulletin of Torrey Botanical Club (Oct.).—E. L. Greene, 'New Western Plants' (*Linum Clevelandi*, *Astragalus Clevelandi*, *Saxifraga malvæflora*, *Chamæsaracha physaloides* (spp. nn.), *Holozonia* (gen. nov.) *filipes*).—C. H. Peck, '*Phallus Ravenelii*' (1 plate).—M. E. Jones, '*Draba unilateralis* (n. sp.).'

Flora (Sept.).—F. Arnold, 'Lichenological Fragments' (1 tab.) —C. Kraus, 'On the Course of the Sap in Plants' (contd.).—A. Geheeb, '*Webera sphagnicola* in Germany.' (Oct.)—W. Nylander, 'Addenda nova ad Lichenographiam europæam' (*Calicium stenocyboides*, *Parmelia dissecta* ("in Gallia et Hibernia super saxa"), *Lecanora decincta* ("in Anglia ad Red Scues, J. A. Martindale, super saxa schistoidea"), *L. anoptizoides*, *Lecidea meiocarpoides*, *L. prasinorufa*, *L. subocelliformis*, *L. periplaca* ("supra murorum lapides ad Staveley in Anglia, Martindale"), *L. tenebrica* ("supra saxa schistoidea in Anglia, Red Scues, Martindale"), *L. coriacella* ("supra saxa porphyrea in Anglia, Red Scues, Martindale"), *Verrucaria planatula*, spp. nn.). — P. G. Strobl, 'Flora of the

Nebrodes' (contd.).—C. Warnstorf, 'A new form of *Sphagnum*' (*S. acutifolium*, var. *Schliephackeanum*).—H. G. Reichenbach, '*Phalænopsis Sanderiana*, n. sp.'—H. Leitgeb, 'The position of the antheridia in Mosses.'

Midland Naturalist.—W. B. Grove, 'Fungi of Birmingham (contd.).—J. E. Bagnall, 'Flora of Warwickshire' (contd.).

Naturalist.—H. Boswell, *Sphagnum Torreyanum*, Sull., in Britain' (near Whitchurch, Shropshire; new to Europe).

Nuovo Giornale Bot. Italiano. (Oct.).—P. Ascherson, 'The position of *Athenia* in the Italian Flora.'—M. Franche, 'New case of fusion of roots' (1 plate).—A. Borzi, 'Morphology and Biology of *Phycocromaceæ*' (2 plates).

Œsterr. Bot. Zeitschrift.—H. Molisch, 'On Cystoliths.'—F. Antoine, '*Myrmecodia echinata*' (1 tab.).—A. Tomaschek, 'On the power of Movement in Plants.'—W. Voss, 'Two new Ascomycetes' (*Phacidium gracile*, Niessl., and *Leptosphæria Fuckelii*, Niessl.).—V. v. Borbas, 'Inflorescentia Cruciferarum Graminearumque foliosa.'—H. Sabransky, 'On the Flora of Pressburg.'—P. Sintenis, 'Cyprus and its Flora' (contd.).—P. G. Strobl, 'Flora of Etna' (contd.).

LINNEAN SOCIETY OF LONDON.

November 2, 1882.—Sir John Lubbock, Bart., F.R.S., in the chair.—The following gentlemen were elected Fellows of the Society: Prof. J. C. Ewart, G. Fry, and Lord Walsingham.—Mr. W. T. T. Dyer exhibited specimens and made remarks on *Cassia lignea*, and on the native implements used in the collecting and preparation of the Cassia-bark in Southern China.—Mr. Charles T. Druery showed two proliferous forms of *Athyrium Filix-fœmina*, raised from spores provided by Mr. P. Neill Fraser, of Edinburgh, and presenting the following abnormal characteristics:—No. 1. The first frond evolved from the prothallus, besides being bi-pinnate and very foliose, instead of the usual uni-palmate form peculiar to seedlings of this family, bore two buds, one in the axil of a pinnule, the other in the axil of a pinnulet; these buds without any dormant period developed at once small palmate fronds and aërial roots, the growth being so vigorous that the roots were projected into a mound of soil raised at a distance of half an inch. The second frond produced bears four buds, which are, however, dormant, the growing season being over. In addition to these axillary buds there is a whitish mass of apparent bud-formation in the crown or the caudex, at the base of the fronds. The same prothallus has also developed three small independent ferns from its edge; these, however, are seemingly normal, which fact, coupled with the abnormal vigour of the main plant, points to a hybrid origin. No. 2 is an altogether different form, being very depauperate and ramose; the two fronds of this have developed no less than thirteen buds, of which the majority have evolved aërial roots, one reaching and penetrating the soil. The buds on the first frond have thrown up small circinate fronds, which have so far not unfolded. The family of Athyriums—rich as it is in variations—has so far been remarkable for its unproliferous nature, the exhibitor falling to find any record of a bulbil-bearing form; it is therefore singular that two forms so distinct in character, yet so alike in their profuse proliferousness, should have originated simultaneously and within a few inches of each other. Finally, not the least singular feature is the extreme precocity of both forms, since bulbil-bearing ferns almost without exception are proliferous only on their ripe fronds and when much farther advanced in development.—Mr. Christy exhibited a living specimen of the Japanese peppermint-plant, which yields the Menthol of commerce, this being the first plant of the kind grown in this country. It was pointed out by Mr. E. M. Holmes that, although this mint did not differ in botanical characters from *Mentha arvensis*, it had a strong peppermint odour and flavour, which were not found in the specimens growing either in Europe or India. He therefore proposed that the plant should be named *M. arvensis*, var. *piperascens*, by way of distinction.* Mr. Baker exhibited a specimen of *Lycopodium complanatum*, collected by Prof. Lawson in Skye in July, 1868.†—A paper was read, "On certain Medicinal Plants of North-West Queensland," by W. E. Armit. Among these is a species of *Aristolochia* and a Croton; also *Grewia polygama*, a specific for dysentery; *Careya arborescens*, used for poultices; *Erythræa aristata* and *Andropogon citriodora*, tonics in febrile complaints; *Euphorbia pilulifera* and *Datura australis*, valuable in cases of asthma.—A remarkable malformation of the leaves of *Beyeria opaca*, var. *linearis*, from Yorke's Peninsula, South Australia, was described by Mr. Otto Tepper.—Some teratological notes on *Carex glauca*, *Lolium perenne*, and *Equisetum maximum* were afterwards read by Mr. H. N. Ridley.

November 16.—Frank Crisp, LL.B., Treasurer, in the chair.—Messrs. O. T. Olsen and J. N. Stone were elected Fellows of the Society.—Dr. W. C. Ondaatje exhibited and made remarks on some Ceylon plants: the fruit of *Randia dumetorum*, long used as a remedy for dysentery; and the leaves of *Sethia acuminata*, anthelmintic in properties; also specimens of the resin of *Semecarpus Gardnerii*, from which a black varnish is prepared.—Mr. W. Thiselton Dyer called attention to a specimen of *Cycas Beddomei*, a new species from Southern India.—Mr. F. J. Hanbury showed a fine example of a fungus grown in a city wharf-cellar, which Mr. G. Murray pronounced to be a species of *Lentinus*.—Mr. C. Stewart exhibited a specimen of *Pilobolus*, and a saucer covered with its sporangia. He explained the manner in which he had observed the sporangia projected from it for a distance of two inches.—Mr. J. G. Baker read the first of his "Contributions to the Flora of Madagascar." This paper contains descriptions of about 140 new species of the polypetalous dicotyledons, mainly discovered within the last two or three years by the Rev. R. Baron and Dr. G. W. Parker. A considerable proportion of them are members of large genera, widely spread through Tropical Asia and Tropical Africa, such as *Eugenia*, *Crotalaria*, *Indigofera*, *Grewia*, *Elæocarpus*, and *Medinella*. Of familiar temperate types there are two new Rubi, two Alchemillas, three Pimpinellas, a Clematis, and two Polygalas. Of genera characteristic of the Cape flora, now noticed for the first time in Madagascar, may be instanced, *Argylobium*, *Lebeckia*, *Crassula*, *Pharnaceum*, *Sphedamnocarpus*, and *Sparmannia*. There is a very interesting new genus of Malpighiaceæ (*Microsteira*), allied to the American *Hiræa*, differing from the general character of that natural order in being almost perfectly diœcious. Two cases very interesting from a geographical point of view are furnished by *Hibbertia* and *Rulingia*, both of which are large characteristically Australian genera, with a single representative in Central Madagascar. Mr. Baron has refound *Rhodolæna altivola*, the most showy member of the endemic natural order Chlænaceæ, which has not been met with since its original discovery by Du Petit Thouars, nearly a century ago. Dr. Parker has devoted special attention to the identification of the drugs, esculents, timber trees, and other plants, which possess native names; and a catalogue of the result of his researches, embodying the identification of 300 native names, will shortly be published in this Journal. —Dr. Maxwell Masters read a paper containing a descriptive enumeration of the *Passifloræ* collected in Ecuador and New Granada by M. Edouard André. Of *Tacsonia* nine species are mentioned, one of which was previously undescribed; of *Passiflora* twenty-nine species, four being new. Some are of great structural interest; while the excellence of M. André's specimens has afforded opportunities for the examination of the complicated structure of the flowers, usually not possible on account of the imperfect condition of the specimens.

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* [Mr. Holmes has since dealt with the plant at greater length in the 'Pharmaceutical Journal' for Nov. 11, pp. 381, 382.—Ed. Journ. Bot.]

† [This is the plant concerning which some doubt was expressed by Mr. Druce at p. 332, and which on further examination proves to be *L. complanatum*. Of the specimens in the British Museum Herbarium, collected by Mr. W. Gardiner on the Sidlaw Hills in October, 1848 (also referred to by Mr. Druce), two are *L. complanatum*, the third being *L. alpinum*.—Ed. Journ. Bot.]

NOTICE.

This twentieth volume concludes the "second series" of the Journal of Botany, and, I regret to add, also my responsible connection with the periodical.

It is no secret that the Journal has never been a success financially. But whilst living in London I felt that any pecuniary loss was fairly made up to me in other ways—valued acquaintances and correspondents, a certain influence, the flow of new books and papers, &c. Since my residence in Ceylon, however, I have had none of these compensations, whilst the expenses of the Journal have been heavier and the subscribers no more numerous. Under these circumstances I am reluctantly compelled to decline to risk any further loss,

After so long and intimate a connection with it, I need scarcely say with how much regret I should see the complete cessation of this Journal. For twenty years it has supplied a real want, which will be felt again as soon as it ceases. Any new arrangements that can be made for the continuation of this, or the foundation of some similar (and improved), periodical repertory of Botany, will have my hearty support, and I hope that of all other English botanists.

HENRY TRIMEN.

Royal Botanic Gardens,
Peradenia, Ceylon.

EDITORIAL.

From the year 1830, when Sir W. J. Hooker began his series of botanical Journals, until the present time, Botany has been represented in England by at least one magazine devoted exclusively to that branch of natural science, and unconnected with any Society. Sir William Hooker's series finally ended in 1857, having thus extended, at somewhat irregular intervals, over a period of twenty-seven years. It may be of interest to give the names and dates of the various sets :—

Botanical Miscellany (3 vols.)	1830–33.
Journal of Botany (4 vols.)	1834–42.
London Journal of Botany (5 vols.)	1842–48.
Journal of Botany and Kew Garden Miscellany (9 vols.)	1849–57.

The 'Phytologist' (Old Series) began in 1844 and ended in 1854; while the 'Botanical Gazette' extended from 1849 to 1851. It would appear that there must have been some special impetus given to botany at the time the 'Gazette' was started, inasmuch as there were then existing three botanical journals—the 'Gazette,' the 'Phytologist,' and the 'Journal of Botany and Kew Garden Miscellany'—a fact which is somewhat surprising to those who know how difficult it is to maintain *one* at the present period. Between 1857 and 1863, when Dr. Seemann started the Journal of which the volume now closing is the twentieth, the only botanical periodical was the new series of the 'Phytologist,' which never attained any recognised position as a scientific magazine, and of which the last number was issued in July, 1863. Dr. Seemann's 'Journal of Botany, British and Foreign' was issued in monthly numbers at two shillings, each containing a coloured plate. Among the contributors to the first volume it is pleasant to find many who have been constant supporters of the work, and whose names appear also in the twentieth. Prof. Babington, Mr. Baker, Mr. Briggs, and Dr. Hance may be specially named as having contributed largely to whatever success the Journal may have attained; others whose names are familiar to the reader of 1882 are Dr. Masters, Mr. Townsend, and the present Editor.

"Dr. Seemann conducted this Journal at a considerable loss, and at the end of 1869 this loss and his many other engagements determined him to give it up. A strong effort was, however, made by some of the leading English botanists to keep the Journal alive, and Dr. Seemann availed himself of the proffered assistance of Mr. Baker and Dr. Trimen in his editorial duties."* With the view of securing more support from those interested especially in British botany, that branch of the subject was made a more prominent feature in the Journal; and the price was at the same time lowered to twelve shillings a year. At Dr. Seemann's death, in 1871, the money responsibilities of the Journal were undertaken by Dr. Trimen. In spite of his careful and energetic editing, the Journal has not on the whole paid its expenses; and it is not to be wondered at that, as he has above stated, he will no longer carry it on at a loss. Mr. Baker, although in no way diminishing his help to the Journal, withdrew his name from its title-page in 1876; it was replaced in 1877 by that of another representative of the Kew Herbarium, Mr. Spencer Le Marchant Moore, who remained associated with Dr. Trimen until 1879, when the departure of the latter for Ceylon necessitated other arrangements, and the editorial duties devolved upon the present writer, the name of the Journal being changed to 'Trimen's Journal of Botany.'

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* Journ. Bot. 1872, p. 4.

Again the Journal has arrived at a crisis in its career. With all its shortcomings—of which no one can be more conscious than the Editor—it serves a useful purpose, and were it to cease its absence would be felt. There would be a break in the chain which has been continuous since 1830, and British botanists especially would feel its loss. However faulty in other respects, the Journal has been the recognised recorder of the more important discoveries in British botany during the last twenty years; the additions to our Flora have been figured and described by competent hands; local lists and notes have been published for many parts of the kingdom; and all facts bearing upon the subject have been duly chronicled. The number of species new to science described in its pages has been very large, as may be gathered from any of our annual lists of new species published in periodicals in Britain. The department of morphological and structural botany has been less fully represented, and the Journal has been criticised on this account. But it may be pointed out that straitened resources have prevented the possibility of furnishing the extensive series of illustrations necessary to the satisfactory presentment of papers upon minute structure; and for the same reason it has been impossible to offer payment for contributions. Papers on histological points have always been, and will always be, welcome; but it is not strange that authors should prefer sending such observations to Journals which can afford to pay writers and to fully illustrate their contributions.

I have determined to carry on the Journal at my own risk for at least another year. If it pays the cost of printing I shall be satisfied; if it does not, I shall reluctantly be compelled to give it up. I would therefore appeal to those—and I am glad to know that there are many—who would not willingly see the Journal die, to help in obtaining additional subscribers.

It would be impossible to conclude this notice without an acknowledgment, on the part of those who have edited the Journal, of the help and support they have met with. Whatever value these volumes may possess is mainly due to those who have so generously contributed to fill their pages; and not only for myself, but for those who have preceded me, I tender them warm and hearty thanks.

JAMES BRITTEN.

P.S.—Although the names at present sent in for the proposed General Index to the twenty volumes are not sufficient to pay for the printing, I have begun to prepare it, and it will shortly be issued. A feeling of the usefulness of such a work, and a hope that copies enough will ultimately be sold to defray the cost of printing, have decided me upon taking this step.

I may perhaps be allowed to express my opinion that the best and readiest way of quoting the Journal is by the year, thus: "Journ. Bot. 1870, p. 33." The double series of numbers to the later volumes, caused by the introduction of a 'New Series,' sometimes leads to confusion, which cannot well arise if the method above indicated be followed.

3, Gumley Row, Isleworth,
November 28, 1882.

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